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Palladio.

A DOZEN years ago there was a book-shop on the north side of the Euston-road, on whose outside shelf there appeared one day a little Italian volume, commended to British buyers by a book-seller's paper label inscribed, "Houses: How to Build."

The happy purchaser of this misnamed book found that he had secured for his sixpence an undamaged copy of "Il Forestiere Instrutto di Vicenza," an unpretentious treatise which, in the guise of a local guide-book, is practically a monograph on Palladio, and contains no less than thirty-six creditable engravings, chiefly representing the works of that great architect. In truth, it contains more, for the aspect of its Italian pages, the sound of its Italian words, and the very look of its Italian mottled binding are enough to bring back to any man who has set foot in Vicenza the memory of the warm day when he first sipped his coffee under the shadow of the great Palazzo della Ragione.

And what a day that was! You went, it may be assumed, to admire, for no man goes to Vicenza save as admiring, or at least reverencing, Palladio, but you were certainly prepared for disillusionment. You knew, for example, that what looked such brave masonry in Leoni's plates would prove to be in many cases mouldy plaster, and you were ready to admit, if pressed, that the Basilica itself was not likely to arouse your enthusiasm. "An academic achievement," you said, "a thing comely and proper on paper, of a severity which one admires in public (as evidence of one's own good taste) just as some folk admire Palestrina—that is, professedly and, perhaps, intellectually, but not with the heart." But what was the result? Disillusionment, indeed, but oh, how utterly reversed was its impact! Instead of finding in the reality a thing colder, smaller, and less interesting than the hackneyed masterpiece you had known so long in books and drawings, there rose before your astonished eye a great, gracious, lovable, almost breathing creation—a thing that spoke to you like the nave of Durham, or like a poem of Wordsworth.

Now was it not so?

We took Palestrina as a chance parallel. The comparison is not wholly amiss, for the error of the man who sees in Palestrina only form is precisely on a line with the mistake of those who see only rule in Palladio. A right-minded musician will be as much amazed by the profound devotion of a Palestrina mass as will the right-minded architect by a certain quality in a true Palladian building, which at present we make no attempt to define. That quality exists to an unsurpassed degree in the Basilica or Palazzo della Ragione, a building whose elements of design are so simple and reiterated with such naïveté that one cannot cease to wonder as one gazes, "What is the ingredient in that architecture, what is the faculty in my mind, that gives the one such a hold over the other?"

It will scarcely be necessary to remind the readers of this journal of Palladio's chronological position in the history of architecture, nor of the direction of his genius. He lived from 1518 (?) to 1580, and in point of time, as well as in point of genius, is generally classed by writers on the Italian Architectural Renaissance among those who contributed to the decline of that phase of art. There can scarcely be a more unjust suggestion. It is, indeed, incontestable that Palladio had no share in the birth of the Classic movement. His date precluded that; his immovable date, which fixed his epoch of energy among those who were already on the downward turn of the wheel. But that the special nature of his art and of his study had any influence in the direction of decay can, we suppose, be very easily disproved.

All the world knows that the special instinct of Palladio's architecture was an adherence as close as might be to such Greek and Roman types as were accessible, and to the exact proportions of those types *where applicable*. How he developed that instinct and transfused it not only into his buildings, but into the work of his successors, immediate or remote, is also known. To such buildings as he built he unswervingly applied the component elements of Classical (chiefly of Roman) architecture; and that his sources might be the richer, and his influence the wider, he not only spent much time in the study and measurement of ancient examples, but embodied the fruit of these studies, as well as the records of his own resultant designs, in a book which has attained over three centuries of fame, and may, for ought we know, be immortal. It is natural, perhaps, to turn with feelings of more immediate enthusiasm to the products of the freer and earlier periods of the Renaissance than to those of which Palladio is the exponent. Certainly, such a choice comes easily to those who are shallow students of architecture. The fascinating and tentative effects of Alberti; the mechanical strength of Brunelleschi; Bramante's generous and free nobility, all present beauties of execution in which even a tyro can see something (not always the right thing) to admire. But in facing Palladio we are facing performance of another class, susceptible of a different appreciation.

To test the true value of Palladio, a man should look at the charges which are levelled against him. What is it that critics of Italian architecture have to say in his dispraise? That he brought in a formality which is foreign to art; that he endeavoured to reduce to a matter of rule and figure the proportions which should be the subject rather of judgment than of mere method; that he rejected all idea of colour effect, and suffered his own genius to be "stifled in an inferior kind of cement."* These charges, to be frank, are just: so just, indeed, that we have only to look upon the other side of them to find in their very terms the secret of Palladio's value—we had almost said of his fame, but the latter belongs in part to the accidents of literary renown, the good fortune of his publication having been, perhaps, not more than it deserved, but certainly more than necessarily comes to a work of equal value.

To return to the charges. They signify

* W. J. Anderson, "Architecture of the Renaissance in Italy," p. 144.

upon analysis no more and no less than this, that Palladio realised three theses which one may put into brief language as follows:—

1. The norm is of value in architecture.

2. The effects of form are not dependent on material.

3. The effects of form are not dependent on colour.

We have called these three axioms "theses" rather than truths, because we are not certain of their complete validity as canons of architecture. They are certainly capable of dispute—possibly even of disproof—but, for all that, they represent a perfectly reputable architectural position, and indicate a point of æsthetic vision for which a great deal may be said.

The question of the value of the norm raises at once a consideration in architectural philosophy which is ever cogent to architects, seldom even appreciable by outsiders. We mean the great question of the *virtue* of precedent, or (to put it into the terms of ethics), of what is among moralists known as "sanction."

Now there never was but one man who thought that the Greek and Roman Orders were elemental, original, divine. That one man was John Wood (the elder), of Bath, who was at pains to write a book to prove that the Jews received the Doric, Ionic, and Corinthian Orders direct from Heaven, and that the Greeks and Romans, by an act of unparalleled and well-organised fraud, deceived the world as to their origin. The opposite pole of opinion is that which we all know is to be found in a rather overheated page of Street's "Brick and Marble."* Truth lies between the extremes; but though the senseless worshippers of Classic purity may be as far from artistic sanity as those who stigmatise them as "forgetful of reality" and "faithful to no religious rule," the surprising outcome of an impartial review of the conditions of architecture is that, rightly or wrongly, there lies in the Classic Orders a certain claim upon the respect of artists which is out of all reasonable relation to their conventional nature and their apparently arbitrary origin. Let us ask, without bias, "What reason can be given which should bind men of modern needs and modern minds to reproduce faithfully, or even approximately, the forms which found favour among the cultivated heathen of Southern Europe in the centuries preceding the Christian era?" To such a question common sense answers emphatically, "None," and the Gothic enthusiast answers "None;" but both, as it happens, are wrong. The world, thank Heaven, is not peopled by Gothic enthusiasts, nor by embodiments of untempered common sense; nor, for that matter, are the balance of mankind Palladians. But there is room among humanity for a body of thinkers who are ready to realise that precedent and tradition are of immense and intrinsic value in more than one aspect of art. Any but the most frivolous of musicians will acknowledge the analogy which his art affords; and as for the poet, he will admit that the immutable necessity of fourteen lines to make a sonnet, and the delicate by-laws of prosody, are instances of the hold which precedent, pure and simple, has upon the very essence of art. And, of course, having once seen and recognised the existence of this fact in art, the force of tradition, it is easy to realise in a second step that this obligation of the artist to the past is not by any means an arbitrary submission to a purely conventional rule of the game, but rather a concession to a human faculty which is no more a thing to be dishonoured than a thing to be combated. In fact, as we have begun to deal in axioms over this matter of Palladio, we may as well invent another to the effect that in all art there is as a necessary factor a certain reference to previous art. This axiom will take abundant confirmation from observance of the human fact that those who are wholly untrained in any art have no genuine appreciation of that art, and perhaps its only successful refutation will be in the contention that, if it be true, the first artist among mankind can have been no artist, for he had no precedent to deal with. To which we reply that we cheerfully accept the paradox.

Far be it from us to suggest that Palladio reasoned as we have reasoned here. The men who work as he worked get their message by more direct means. But we have justified his purpose in reverencing the Classic precedent and in endeavouring to provide access to that precedent in its purest form.

There is, indeed, another aspect of this appeal to the Classic fount, which we have hardly space to amplify here. It is the claim of proportion, which in architecture is great, we had almost said supreme. Let us put the case most briefly. An architect of perfect judgment can be trusted to make no mistakes of proportion, but since the architect of perfect judgment has almost certainly obtained that power of judgment from the study of examples in which the proportions were just, and since, moreover, the man of perfect judgment is so rare as to be practically non-existent, it would be unreasonable of mankind to disregard those past exemplars of good taste which are in themselves not merely the repositories of good proportion, but almost the sole means by which man's appreciation of such proportion is won.

Then we observed that Palladio had to meet his enemies on the charges of using inferior materials and of disregarding colour decoration. The baseness of his materials is, perhaps, rather our misfortune than his fault. In so far as Palladio implied by his work that the expression of construction in architecture was of no importance, we apologise on his behalf, and make no attempt at his defence. What we do say in his favour under this head is merely this: that in his disregard of materials he may have shown ignorance of building construction, but he also showed his extreme reverence for the beauty of certain forms, apart from any question of the value of the materials in which they were executed. This, in itself, was praiseworthy. His disregard of colour is another though a kindred matter, and is, as it happens, of prime importance to his position in the history of art.

It does not often occur to people to realise that our modern England is capable of appreciating pure form to a degree which was unknown to earlier humanity. It is a fact too little observed, that the history of architecture has been to a large extent the history of the gradual abandonment of effects of colour *plus* form in favour of form-effect unmingled with colour. We have no desire to labour this point, and no wish to overlook the fact that the power developed among later Europeans of appreciating architectural form without colour may have arisen solely from the accident that the Greek and Roman remains upon which our revived taste is formed were for the most part divested of the rich colour harmonies which were a part of their pristine embellishment. But the fact remains to be reckoned with in the history of architectural taste, and the part which Palladio took in the development of this worship of uncoloured form is far from negligible. That our nation admires Somerset House is partly due to Palladio, though not all Britons know his name.

We regret to acknowledge that the new book on Palladio by Mr. Fletcher* seems to us too small; not too small in material bulk, but too slender in its grasp of the large subject which it approaches. We are by no means sure to what audience Mr. Fletcher and his publisher mean to appeal. Architects and the elder students of architecture are, we suppose, hardly demanding a book of secondary information on a subject which is accessible to them in original sources. To the general public Palladio has no appeal, and the junior scholar of architecture will not usually seek the facts he wants in such a form as this, though, no doubt, it is by him more than by any other class of reader that the book will be handled. Here, perhaps, has been one of Mr. Fletcher's difficulties: to whom was he to address himself? We are inclined to believe, from the absence of any expression of other intentions in the "Forewords," that Mr. Fletcher's aim has been the highest aim possible—namely, that of providing a monograph which shall be a standard work on this great master. If this is so, we commend his temerity, but would suggest the removal of certain blemishes in a second edition, and would especially counsel the excision from the bibliographical list of all works which are not recognised and primary authorities on the subject. Such a list should indicate sources, not channels, of information, and the inclusion therein of Baedeker's "Guide," and "A History of Architecture on the Comparative Method," can be of no use to the genuine student who wants to verify facts, however interesting such manuals may be to the writer.†

It will be well to put forth at once some criticisms on points of detail which, small in themselves, interfere with the effect of what should essentially be a book of dignity. The author, in dealing with Palladio's writings on Public Buildings, treats the words "Agora" and "Palæstra" as plural forms (see pp. 20, 25, and 26). "Piazzi" as the plural of "piazza" is a similar error. The name of Daniele Barbaro, patriarch of Aquileia, was not "Signor Daniel Barbero." It is affected to call Padua "Padoua" and "Padova." There is a failure of syntax at the opening of Chap. II., and Minerva Medica (p. 102) need not have her names divorced by a comma. It is an ungracious job to dig out bits of bad writing from any man's book, and to do Mr. Fletcher justice, we are glad to own that we have not found in his work any other passages quite so bad as that in which he observes that "In the entablature of his

* "Brick and Marble," p. 109.

* "Andrea Palladio: His Life and Works." By Banister F. Fletcher, A.R.I.B.A. London: George Bell & Sons. 1903.

† It would be well to include among the authorities Schmidt's excellent volume of heliogravures, published at Vienna with the title "Vicenza."

orders, we find these to be generally unbroken."

But then the chapter in which this occurs is the chapter headed "Palladio as an Architect," a chapter which, one thinks, should be the pith and marrow of the book. The theme is a great one, whether treated in a hostile or a friendly spirit. But in Mr. Fletcher's hands it is all over in eight and a half pages, and so far from finding these pages full of tight-packed valuation, our eyes light on such observations as that "in the use of the orders he was full of resource, and no particular method seems to have been peculiarly his own," or that "simplicity seems to have been in general sought after," or again that "it is after all in the general proportion of his buildings, and their various parts that our master pleases most." We do not mean to be hard on Mr. Fletcher. Some of these little sayings are true enough, but they are small and perfunctory. One does not ask for enthusiasm in a critical work—indeed, it is better absent—but one expects the writer to be sufficiently interested in his subject to interest the reader, and perhaps, but not necessarily, to exhibit some original line of thought.

There are some good and true things in the book for all that. Mr. Fletcher brings in with apposite force the very remarkable utterance of old Wotton, that "we want *art* rather than *stuff* to satisfy our greatest fancy," and criticises with just reasoning the impossible suggestion that the windows of the Municipio at Brescia might be Palladian. His last chapter (on Palladio and his school) rises at times to the critical level which the subject demands, and if the author were to cut out from it the unnecessary quotations from Pope, and expand those portions which deal directly with the subject in hand, he would go far to improve his book. The importance to English architecture of the intellectual relation of Inigo Jones to Palladio is well, but too briefly, brought out.

The illustrations, mostly photographic, are well chosen and well executed. It is always a question, in representing the Basilica, whether to include the adjoining Campanile. We think Mr. Fletcher has done well, in the interests of Palladio, to omit it, for its proportions are, to say the least, exceptional.

We cannot blame the author for comprising among his illustrations the effective Arco di Trionfo at the foot of Monte Berico, though this is known, as he admits, to be post-Palladian in date of execution. It would be well for any writer in describing the buildings of Palladio to give all the names by which those buildings are, or have been, popularly known. The Casa del Diavolo, for example, known in Vicenza as the Antica Posta, is familiar to some writers as the Casa Porto (or Porto al Castello). Similarly the house called by Palladio the Casa Giuglio Capra (Mr. Fletcher spells it "Guioglio") is known to others by the name of Franceschini. Cross references in an index, if there were one, would easily set the difficulties of identification at rest.

It is, by the way, rather inconsistent to describe the Basilica as Palladio's masterpiece and the Teatro Olympico as his finest effort.

But we have been writing of Palladio without mentioning the Villa Capra, an unpardonable breach of custom. Let us speak of it now for a farewell, or rather, since some things are unspeakable, let us think of it with closed eyes, and call up to memory, not the engraved plan, section, and elevation that we all know so well, not even the Alinari photograph that we inevitably bring home with us, but the thing itself, forlorn, if you will, crumbling and discoloured, but how full of charm! "One must allow," says the guide-book (not Baedeker), "that the Rotonda (so they call it) is one of the best of buildings, whether one considers its form, so well adapted to the rising ground, or the marvellous disposition and ordination of its parts, or their refined proportions, which combine"—but no; we must lapse into Palladio's tongue:—"*Onde viene a comporsi un tutto di eccellente bellezza e di rara perfezione.*"

And do not the very words bring focus to the memory, calling up the long scytheless grass, the hum of the bees, the breath of the lilacs, the ceaseless nightingales, which are no accidents, but very elements of the scene? Palladio surely took them into account; why not we? The architecture was made for the setting, and both have survived together.

A triumph of Italian art, in a triumph of Italian nature.

NOTES.

Locomotives on Highways.

THE answer of the Home Secretary to the question put to him in the House with regard to the traction engines and trains of trucks which are being used in the London streets is hardly satisfactory. He expressed himself as powerless to act in the matter, and said it was a question for the County Council, or if the existing legislation were insufficient, one to be brought before the Royal Commission on Locomotion, which is shortly to sit. The position of affairs seems somewhat curious. Under the Locomotives Act, 1898, the Municipal Authorities have power to permit locomotives with waggons to use the highways, and also have power to pass by-laws prohibiting or restricting such traffic. Such by-laws have to receive the approval of the Local Government Board, but the Act seems to give no power to the Local Government Board to rescind any by-law once so passed. If we are correct in this assumption, it is an instance of a flaw in legislation; for in the Locomotives on Highways Act of 1896, which deals only with light locomotives, viz., those under three tons, the Local Government Board has express powers conferred upon it to make regulations which are to have effect, notwithstanding any by-laws made under any other Act; and it seems clear that such a power should have been reserved to the Board in the case of the heavier locomotives. It is important, however, that the public should remember that they have their own remedy, since it has twice been decided by the Court of Appeal that compliance with the Acts and by-laws is no protection to the owner of the locomotive on a highway, but that he remains liable to an action by any one suffering injury if the locomotive can be shown to be a nuisance, quite apart from the question of any negligence in its management.

London Rates.

THE warning we gave utterance to last week in our "Note" on Local Indebtedness seems to have been in no way premature. We drew attention to the fact that the Local Authorities had recourse to their borrowing powers because the ratepayers would speedily be aroused to a sense of their position were a due proportion of the increased expenditure placed directly on the rates; but that, nevertheless, as the interest on the loans was directly charged on the rates, it behoved the ratepayers to be none the less on their guard. The Finance Committee of the London County Council have announced an increase of 1¼d. in the rates, bringing them up to 16¾d., this increase being stated to be largely due to the growth in the annual charges for debt.

The Penrhyn Libel Case.

LAST week we referred to the debate on the long existing strike at the Penrhyn quarries. This week we have to note a libel action brought by Lord Penrhyn against a Mr. Parry for matter published in a paper called the *Clarion*. Of course, the moment the dispute got into court the general merits of the strike were constantly referred to. As a matter of fact, however, the actual litigation turned on a small point, namely, whether the statements made by Mr. Parry were true or could be justified. Mr. Parry stated that Lord Penrhyn had given his workmen who returned to the quarries for a time during the strike 1*l.* apiece as a bribe. It was clear from the evidence that the money was given as a present by the quarry owner, but this lordly way of presenting a sovereign apiece to five hundred workmen was certainly liable to misconstruction. The other libel was equally unfounded, and the result of the trial was a verdict in favour of Lord Penrhyn for 500*l.* damages. The litigation emphasises more than ever the necessity for the Board of Trade to appoint a conciliator between the parties to this strike, for this appears to be the only hope of putting an end to a dispute which is ruinous to the workmen and the districts in which the quarries lie, and also inconvenient to many who are in the building trade.

Architects' Plans and Foundations.

MR. FULLER, the architect, of Dublin, has written to the *Irish Builder* a letter on the subject of the additions to the Killarney Asylum, together with his reply to the Local Authority, in regard to a statement in the opinion of counsel, who seems to have been asked if the Local Authority was liable for extras when imaginary foundations are shown on the plans. The case would have been more instructive if counsel's opinion had also been published. Counsel seems to have suggested that it was improper for the architect to show imaginary foundations on the plans, and leave a building-owner afterwards to pay an extra for work he never contemplated. Mr. Fuller shows plainly enough, as, indeed, is common knowledge, that imaginary foundations are constantly shown in plans. Being imaginary, it is obvious that the work cannot be estimated for, and must be paid for by result. Strictly therefore, the foundations are not extras at all, and presumably the building-owner pays no more than if the foundations in the plans had not been imaginary. But it is possible that a building-owner may not understand that the foundations are imaginary, and may believe that the amount of the contract is intended to cover work below as well as

above the surface. We do not know more of the facts of the Killarney case than are stated in Mr. Fuller's letters, but we suspect that if the whole matter were well sifted it might be found that the dispute arose from a misunderstanding as to the foundation-work being provided for in the contract. It is obvious that an architect should explain to a building-owner that the foundations will have to be paid for according to their cost, and that a sum over and above that for the cost of the above-ground work will have to be provided. Architects, and, indeed, other professional and business men—dealing every day with points of their particular occupation—are apt to forget that the client is not equally conversant with them, and both parties in the result think that the other has not behaved well. It is the old story of the quantity surveyor whose charges are constantly objected to because to the building-owner he is an unknown name.

Gas Supply to Successive Tenants.

A POINT of some importance to traders and householders in London with reference to the supply of gas to their premises was decided by the Court of Appeal in the case of The Gas Light and Coke Co. *v.* The Cannon Brewery, the question being as to the rights of the gas company when the premises have changed hands and the former tenant has left arrears of gas rent unpaid. Section 18 of the Gas Light and Coke Co.'s Act, 1872, provides that when such arrears are left unpaid the gas company shall not "require payment" of such arrears from the next tenant, unless the incoming tenant agreed with the defaulting consumer to pay such arrears, or unless he shall continue the trade or business of the outgoing tenant, and shall have paid to the outgoing tenant, or to the owner, lessee, or mortgagee in possession of the premises, a consideration for so doing, and in the absence of collusion the gas company shall supply gas to the incoming tenant; and Section 39 of the Gas Act, 1860, is in nearly similar terms, except there is no provision as to the purchase of goodwill in that section. It was contended that the words "require payment" gave the gas company no right of action for the arrears, but that their only course was to refuse a supply of gas until the arrears were paid. The Court have now decided that the gas company, in the absence of collusion between the parties, have no right to cut off the gas from the incoming tenant on account of default on the part of his predecessor under Section 16 of the Gas-works Clauses Act, 1847, that right being only given to the company as against the person actually supplied with the gas, but that where the provisions of the sections have been satisfied as to agreement, &c., the gas company have the right to sue the incoming tenant for the arrears. This decision overrules the case of The Gas Light and Coke Co. *v.* Meade, decided many years ago, but is valuable as rendering the position of the incoming tenant as regards the right to gas supply absolutely clear. In this connexion we may note the fact that a receiver appointed to manage the affairs of a joint-stock company in the interest of the debenture-holders has been held not to be an incoming tenant carrying on the business of the outgoing tenant within the meaning of Section 18 of the Act of 1872.

Shop Clubs.

THE case of Balchin *v.* The Trustees of the Provident Fund of the Army and Navy Auxiliary Co-operative Supply, although it decided no new point, but was merely an interlocutory motion on which no order was made, has served one useful purpose, since it has drawn attention to the Shop Clubs Act which came into force only in January of this year. This Act has rendered it illegal for an employer to make the joining of a shop club or thrift fund a condition of the employment of any workman unless such club has been registered under the Friendly Societies Act, 1896, and is subject to the provisions of the Shop Clubs Act. The benefit societies of the railway companies are, however, excepted from the Act. This is one of the measures where it would be useful to have retained the preamble to the Act, for whereas the mischief it was passed to cure is not apparent on the face of it and may be forgotten, its provisions may seem only calculated to deter *bonâ-fide* attempts on the part of many employers to encourage thrift in their employees.

Slow American Work.

REFERRING to the Nile Reservoir works, our contemporary, the *Scientific American*, says that their rapid construction will appeal very strongly to the inhabitants of New York, who are now waiting patiently for the completion of three important public works, the Croton and Jerome Park reservoirs and the new East River Bridge between Brooklyn and New York. The contract for the Croton dam was signed in August, 1892, six years before that relating to the Aswan dam, in Egypt, but it is believed that the work will not be finished before October, 1904. The contract for the Jerome Park reservoir was signed in August, 1895, and the works were to have been finished by August last; but at the present time it is tolerably certain that the dam will not be finished before the early part of 1904. Our contemporary remarks that the same exasperating delay is being experienced in the Department of Bridges as in that of Water Supply. The construction of the new East River Bridge, now generally known as the Williamsburg Bridge, was commenced in 1896, nearly seven years ago. The delay that has occurred is attributed to the failure of the cable contractors "not merely to live up to their contract time, but to show even the semblance of a desire to do so." These comments are a little at variance with the criticisms sometimes directed against British contractors.

Efficiency of Centrifugal Pumps.

IN a paper recently read before the Institution of Mechanical Engineers, Dr. Stanton described some experiments undertaken for the purpose of obtaining further information on the losses of efficiency in centrifugal pumps, and as to the most suitable means for reducing such losses. The question is of considerable interest to hydraulic engineers, because it is not easy to account for the fact that, although a centrifugal pump is akin to the turbine, its efficiency is very much lower. Probably this difference may be explained by the consideration that, whereas the potential energy of the water in the turbine is converted into kinetic energy with very little loss, in the pump there is considerable waste in converting the kinetic energy of the water leaving the wheel into the potential or pressure form, even when the greatest care is taken to avoid shocks and sudden enlargements. Apart from Mr. Appold's experiments, the chief work of the kind in this country has been performed by the Hon. R. C. Parsons, and our knowledge of the efficiency of high-speed pumps is chiefly derived from the published results of an investigation undertaken by M. Gerard Lavergne. The points still remaining for elucidation are: (1) The relative efficiency of curved and radial vanes at high speeds; (2) the efficiency of the vortex chamber; (3) the efficiency of guide passages; (4) the possibility of high lifts by centrifugal pumps with a single wheel. The author describes in detail the nature of the apparatus used in his experiments, and from his records the following general conclusions may be drawn: In high-speed wheels, the effect of moderately recurving the vanes at the outlet is beneficial; in a wheel which discharges into guide passages the efficiency is higher than in a pump discharging into a free vortex; the number of guide passages should not be less than four, and the areas at inlet should be so proportioned that the velocity of flow into the passages may be equal to the velocity of discharge from the wheel. These results seem to point to the conclusion that for dealing with moderate volumes of water at high lifts, increased efficiency, as well as economy in material and space occupied, would be attained by the adoption of a high-speed pump driven direct from the motor and designed on the principles mentioned. For supplying large quantities of water the present slow-speed pump direct driven from a steam-engine has undoubted advantages, but there are very many cases where centrifugal pumps of small and moderate size may be used in place of reciprocating pumps, and this paper is useful as suggesting the lines upon which further improvements may be made.

Electric Resonance.

THE lengthy paper by Mr. Field on "Electric Resonance" which was read in abstract to the Institution of Electrical Engineers last week treats of a subject of considerable importance to electrical engineers. We hope that the discussion on it which will take place next week will bring out some interesting experiences. The paper had been read previously to the Glasgow local section and the discussion on it has been published. To any one who is conversant with the literature of the subject there is little that is new in the paper. The method of accentuating the harmonics in the pressure waves is some ten years old, and Blondel, Armagnat, &c., have used the oscillograph in the same way as Mr. Field. M. Armagnat especially has not only shown the eleventh and thirteenth harmonics and how they interfere with one another, but has actually found the mathematical equation to the pressure wave. The suggestions made at the Glasgow meeting that it would be possible to find the equations by graphical analysis show that the practical impossibility of this method of procedure is not yet fully appreciated. More recently Professor Hospitalier has studied resonance by means of his "ondograph," and has obtained some remarkable results. The main phenomena of resonance—namely, the abnormal rise of

pressure under certain given conditions—can easily be shown experimentally. Sir Oliver Lodge's experiments, in which Leyden jars are made to overflow, will be remembered, and resonance methods are employed in the every-day work of wireless telegraphy. Singing arcs and whistling telephones are also examples of the electric phenomenon.

The Society of Painter Etchers.

THE twenty-first annual exhibition of the Society of Painter-Etchers, now open at the Society of Painters in Water Colours' Gallery, is a remarkably good one, and we are glad to observe that there seems to be a steady increase in the proportion of genuine and pure line-etchings, and a decrease in the number of those cooked effects of the plate which hardly represent the art of etching properly so called. A genuine mezzotint is another matter; that is a separate and recognised branch of the art, and the exhibition shows some fine examples of it, notably several works by Mr. J. Knight, and Mr. Barrett's "Moorland" (97). Among the line etchings the catalogue starts with some good examples by a lady, Miss Mary A. Sloane; Mr. C. J. Watson and Mr. Frank Short are contributors in the same class of work; Mr. Short's "A South Coast Road" (22) is a good instance of the manner in which distance can be shown and even colour suggested in a pure line etching. Mr. Wyllie is another true artist in etching; in one of his four works, "The Stranded Derelict" (29), we see how much effect can be produced by the untouched space (representing water), the emphatic points only being brought out: a class of subject and effect peculiarly belonging to etching. We see the same method of handling well illustrated in Mr. Paton's "On the River at Dort" (128). Mr. Evershed's works show very delicate handling of line, but are rather wanting in concentration of effect—finished everywhere up to about the same point. Mr. Spence's "The Mastmaker's Shop" (52), with the dark interior closely shaded and the light seen without, is a good piece of effect. Mr. Haig's architectural interiors differ essentially from all these; they are really architectural drawings, admirable from the architect's point of view, finished in every part like engravings; but they represent the science rather than the art of etching, and some much slighter architectural studies are more artistic in feeling. Among the more imaginative works Mr. Legros' "L'Ouragan" (81) is the more powerful, and is less grotesque and weird than his "Triomphe de la Mort," which we cannot much admire. Mr. Alfred East exhibits some landscape etchings in a rather curious and crude "blottesque" style, but not without power. Mr. Holroyd's "Borrowdale Yews" and "A Yew Tree on Glaramara," (155) are bold in effect but not sufficiently broad and stately in style for the grand poem of Wordsworth's which suggested them, and part of which is quoted; "Great End, Scawfell" (156), less ambitious in subject, is more successful in a pictorial sense. His "Siena Cathedral" (160) is a powerfully treated architectural subject. Some good book-plates are exhibited by Mr Sherborn and Mr. Eve—book-plates of the right type, symbolical and decorative, not realistic. Mr. Helleu, as usual, is represented by a number of his clever and characteristic dry-point portraits of French ladies, or ladies who look French.

Institute of Painters in Water-Colours.

THE eighty-ninth exhibition of the Institute of Painters in Water-Colours, at their Gallery in Piccadilly, covers a great amount of wall-space, but it must be admitted with regret that there is more of quantity than quality. We have always been of opinion that the extent of the Galleries of the Institute has been a factor adverse to the quality of their exhibitions; the space is there and has to be filled, and it cannot be filled by works of which the majority are of a high artistic character. A general average standard of execution is of course maintained, but the works of real interest are even fewer in proportion than usual this year. Large drawings do not make high art. The President (Mr. Gregory) shows a good portrait (475) and a study for his picture "Après" (476), but his contributions are hardly of the usual importance; nor is Mr. G. Wetherbee's slight work, "Study for a Shepherdess" (303), quite what we usually expect from him. Various small works by Mr. J. R. Reid and Mr. John White are all good; Mr. Weedon shows some fine broadly executed landscapes in the old English water-colour school of which Cox may be said to have been the founder. Mr. David Green's seapiece, "Clearing out after Heavy Weather" (87), is a fine work. Mr. Hassall, in "The Morning of Agincourt" (403), makes a careful and creditable attempt to realise a scene celebrated in history. Mr. Huson's "An Old-fashioned Subject" (105) is a good landscape answering to its title; among others may be mentioned Mr. Kinsley's "Dunkery Beacon" (150), and "Porlock Weir" (362); Mr. Horatio Walker's "An Autumnal" (396); Mr. J. S. Hill's "On the Common" (498); and Mr. James Clark's "A Mood" (585), a decorative picture of rather unusual character, and very successful both in colour and design.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held at No. 9, Conduit-street, on Monday evening, when the chair was occupied by Mr. Aston Webb, A.R.A., President.

The Gold Medallist.

The Secretary (Mr. Locke) read a letter which had been received from Sir Dighton Probyn, Keeper of the Privy Purse, in answer to a communication to the effect that the Institute had elected Mr. C. McKim (New York) as the recipient of the Gold Medal. His Majesty expressed his full approval of the selection of the Institute.

Death of Professor Roger Smith.

The Chairman said he regretted it was his melancholy duty, as it was at the last meeting, to announce the death of another very distinguished member of their body—Professor T. Roger Smith, who was laid to rest that day. They all knew him very well, and they all loved him very much. Professor Roger Smith was elected a member of the Institute, first as an Associate in 1856 and as a Fellow in 1863, and it was not too much to say that no member of the Institute from that time took a more active and more useful part in the work they had carried on. The deceased gentleman was a real student of architecture; he was a very learned man, and he was a very modest man, and a very lovable man. His practice took many forms, and many branches of their art engaged his attention, and whatever he did was done with single-mindedness; and he had that happy and sympathetic quality of being able to meet his professional brethren in all sorts of ways, and he (the Chairman) believed he was using no language of exaggeration in saying that he made no enemies in doing so. He had held nearly all the positions in that Institute; was a District Surveyor of West Wandsworth, President of the British Institute of Certified Carpenters, and examiner in carpentry and joinery, and in sanitary building construction to the Carpenters' Company; and he was a member, and had served for a time as Chairman, of the Statutory Board of Examiners. He was also Chairman of the Committee that had had in hand the question of the law of ancient lights, on which he was a great authority. He was architect for the North London Hospital for Consumption, for the Ben Jonson Board School at Stepney, the sanatorium at Reedham, and the new laboratories of University College. He was author of several works on architecture, and a very large number of young men passed through his hands as the Professor of Architecture at University College—and those who had had the opportunity would, he knew, testify to the value of his teaching and the kindness of his heart. A full notice would appear in due course in the *Journal*, and it was only for him now to express the regret of the Council and the members of the Institute at the great loss they had sustained. Professor Roger Smith had died full of years and full of honour, and they were thankful for that, and they were thankful for the memory of him and of his kindness, and the sympathetic way in which he treated them all. They would, he was sure, wish that the Council should forward to his widow and family a sincere vote of condolence in the loss they had sustained, and an expression of the high appreciation of the works he had done for the Institute during his life.

Mr. Alexander Graham, hon. sec., said he was quite sure every member of the Institute present and every member absent would endorse the respectful words which had just been uttered by the Chairman in relation to their deceased and dear friend, Roger Smith. There were a great many better acquainted with his work and career than himself, but he might say that in the transactions he had with him in professional matters, he found a man full of enthusiasm for any work he had to undertake and that he had a sincere desire to do that which was right and just towards his fellow men. He did hope that in the letter which would be sent to the relatives some expression should be used with reference to Roger Smith as a man as well as a professional brother. The goodwill he always showed to any man with whom he had dealings, the kindness of heart that prompted him in all his transactions, would be to all of them a very pleasant memory, and he was quite sure it would be very pleasing to his relatives to receive from them as a body their respectful reverences of a kind, good-hearted, worthy man.

Westminster Cathedral.

The Chairman said that before he called upon Mr. C. Hadfield to read a paper on Westminster Cathedral, he should say that they had hoped to have had the Duke of Norfolk and Cardinal Vaughan with them. The Duke of Norfolk was, however, in Rome; and Cardinal Vaughan had written regretting that the state of his health would not allow of him accepting the invitation, but expressing the hope that he would have the opportunity of reading the paper and discussion afterwards.

Mr. Hadfield then read the paper, which was illustrated by a number of lantern slides.

In some preliminary remarks Mr. Hadfield stated that the idea of erecting a cathedral for the Roman see of Westminster originated with Cardinal Wiseman a few months before his death in February, 1865. The project was taken earnestly in hand by his successor, Cardinal Manning, and in 1884 the present cathedral site, consisting of about four acres, upon a portion of which had previously stood the Tothill Fields Prison, was acquired for a sum of 55,000*l*. Cardinal Manning died in January, 1892, leaving the task of raising the edifice to his successor, Cardinal Vaughan.

The idea of erecting a great Basilican church, an attempt to reproduce old St. Peter's, was abandoned as impracticable; and with it the competitive system of getting a design. In July, 1894, Mr. J. F. Bentley, who had expressly declined to take part in any competi-

tion for the building, was asked to undertake the designing of the cathedral, and consented. Prior to beginning the work he spent some time in Rome, and visited St. Mark's, Venice, and the group of churches on the Adriatic coast which had been influenced by the St. Sophia tradition. He admitted that the buildings at Ravenna first enabled him to decide on the forms and treatment of what had been in his mind. On returning to London in March, 1895, he rapidly prepared the plan, with an internal area of some 54,848 sq. ft., of a great Byzantine cathedral which, with the general lines of the design, had been long maturing in his mind. Later, a model was prepared, one forty-eighth the actual size, executed in Kauri pine. The foundation-stone—a block of Cornish granite, 5 ft. by 3 ft., and 2 ft. 8 in. thick—was laid on June 29, 1895. The Byzantine, instead of the Gothic style, had been decided on after much deliberation. The question of cost weighed heavily against a Gothic design. With modern appliances, a Byzantine cathedral of brick would be erected within three or four years with the means at command, leaving the marble and mosaic decorations to be added as time went on and the necessary funds were available. Bentley himself fully concurred in the decision. "I am not attempting a new style," he said, "that is impossible; but intend, as far as I am able, to develop the first phase of Christian architecture." His plan of the cathedral, Bentley explained, was not that of the Eastern Church of the Justinian period, but an example of what might have been unfolded had not the decadence of the Roman Empire terminated the growth of congregational requirements in the East. The plans of St. Sergius and St. Bacchus, Constantinople, or of St. Vitale, at Ravenna, both of about the same age, it was evident were arranged from a liturgical rather than a congregational standard, while the church of St. Mark, Venice, erected nearly four centuries later, indicates a marked advance in the latter direction, showing clearly the course the development was taking.

The church is not orientated, the axis of the choir being turned to the south-south-east. This was demanded by the exigencies of site and surroundings, and by considerations of cost, lighting, &c. It was, moreover, in accordance with Roman precedent where churches had to follow the lines of existing streets and ways. An important factor in deciding the levels and lie of the foundations, crypt, &c., was the existence of a platform of concrete 9 ft. thick, the foundations of the old prison, which underlies a portion of the site in a diagonal line drawn from the north jamb of the great entrance portal to the south pier of the sanctuary arch.

Externally the cathedral has an extreme length of 360 ft. and a width of 156 ft.; the height of the nave being 117 ft.; height of the façade (not including the turrets), 99 ft.; height of the campanile, 284 ft. Internally the dimensions are:—From the main entrance to the sanctuary, 232 ft.; depth of the sanctuary, 65 ft.; and of the raised choir beyond, 45 ft., making a total internal length of 342 ft.; width of nave, 60 ft.; width across the nave and aisles, 98 ft.; and across the nave, aisles, and side chapels, 148 ft.; height of the main arches of the nave, 90 ft.; and to the crown of the domes, 112 ft.

The architect's leading constructive idea has resulted in a great building of brickwork, set in cement mortar, covered by homogeneous concrete domes, vaults, and flats, &c., without recourse to the use of steel or iron work, and with a sparing use of oak timber in the roofs of the apsidal choir and the transepts, and of teak in the upper stage of the campanile, with a provision for the gradual completion of the interior by lining it with marble up to a height of 40 ft., and above that with decoration of mosaic work.

Mr. Hadfield gave details of the materials used, and particulars of the exhaustive series of tests to which samples of bricks and concrete were subjected by the architect prior to their selection in bulk for the work. The cement selected was "the best Goliath brand," and ground so fine that the residue on a sieve of 5,800 meshes to the square inch would not exceed 10 per cent. The brickwork of the footings was double the width of the walls above, the concrete below extending from 1 ft. to 2 ft. outside. Faversham stocks were used for the lining of the interior behind the future marble and mosaic work; thin Bracknell red-facings (under 2 in. thick) for the exterior, Fletton wire-cut bricks for the large piers and the walls, Poole wire-cut bricks for the smaller piers, and hard vitrified blue Staffordshire bricks for the outside facing of the underground vaults and sacristy, and for the damp courses, set in nearly neat cement. No machine bricks have been used. English bond was adopted generally, the outer facing excepted. For internal facing, stock bricks were used, being best adapted for adherence when coated with the bedding for decorative work. Portland stone from the Brown bed was selected for the external dressings; and a high plinth of fine-axed Penrhyn granite, in courses, set with a bold open joint, was placed at the ground level to resist the injury from traffic. Granite has been used for doorways and elsewhere with the same intent.

As regards the domical construction, the architect's idea had been at first to save much centering by using cast segments of a sphere and building them up into domes; but he afterwards abandoned this method for that of a homogeneous mass of concrete thrown on to a centering. The sanctuary dome alone is pierced, and there are twelve windows encircling it, with an ingenious system of counterforts flanking each opening.

The marble monolithic columns are an important portion of the general scheme of colour decoration in the cathedral. Great care, skilful research, and a large outlay have been incurred in procuring them. They have been presented by many benefactors. In S. Peter's crypt round the apex below the retro-choir they are of red Norwegian granite, with varied capitals of Hopton wood marble and Derbyshire marble bases.

The columns on either hand of the nave, twenty-nine in number, are of verde antico from the classical quarries lately reopened at Larissa in Thessaly; Greek cippolino from the Island of Euboea; Swiss cippolino from Saillon in the Rhône Valley; Languedoc; Italian breccia from Seravazza; grey granite from Norway; and the red granite which is not unlike ancient porphyry. These shafts, 13 ft. long, each stand on a moulded base of Norwegian granite. The columns dividing the aisles of the Blessed Sacrament and Lady-Chapels from the sanctuary are of jasper and red Norwegian marble of lovely colour and figure. There are fourteen columns of pavonazzo in the sanctuary galleries.

The columns have delicately sculptured statuary capitals of Carrara marble, each varying in design, and were fixed in position after the main arches carrying the domes were completed and the superincumbent weight had taken its proper bearings. The baldacchino above the High Altar, on the design of which Bentley bestowed much care, will be constructed of statuary inlaid with mosaic; and it will be supported by eight superb monoliths of onyx, 15 ft. in length, procured from Africa after long search and inquiry.

Cast lead is used throughout, and the roofing and ridges are wrought with welted rolls, while the finials have the individuality inseparable from Bentley's work. The windows are glazed with roundels and white translucent glass, with strong pattern leading. The steps of the circular newel staircases which give access to the crypt, galleries, and roofs are made of hard artificial stone, composed of Portland cement and crushed granite. The outer covering slabs of the domes are of the same material. The flats and gutters about the domes and roofs are laid with asphalte. In the large windows Doulton terra-cotta tracery, or lattices, of a varied and piquant design have been made use of.

The heating is by hot air on Haden's system, to be supplemented by low-pressure steam-pipes in the galleries. Two spacious heating chambers are provided in the basements of the Blessed Sacrament Chapel and of the baptistry.

In treating of the design of the interior and exterior, the author called special attention to the arrangement of the nave arcading—a favourite feature with Bentley, consisting of the continuous treatment of the arcading along the full length of the nave to the sanctuary arch, without ignoring the crux arrangement of the transepts, which are thereby invested with increase of interest and mystery. This contributes to the perspective and proportion of the interior in a marked degree. The architect has also scored a success in the lighting. The tympanum of each of the main arches is pierced by a semicircular lunette of 25 ft. diameter, fitted with delicate tracery, and below, between well-defined pilasters, a pair of windows is devised. The lighting is further happily emphasised by the twelve windows round the sanctuary dome. The perspective of the interior has obviously been focussed on the High Altar and its covering, the baldachino, the supreme spot of sacrificial interest. Each bay of the nave holds in its lateral face the mystical number of seven arches, four on the ground level carrying the galleries, each 12 ft. span, two secondary arches of 25 ft. span, and the great archivolt "embracing and unifying the whole system."

The principal or western entrance from the exterior flanked by the campanile, a composition extending 65 ft., and embracing in the great arch three doorways—the outer for the laity, and the middle for the cardinal, archbishop, and clergy—leads into porches attached to a spacious narthex the entire width of the church, terminating at one end with an entrance from the side street, and with the baptistry at the other.

The narthex gives access to the nave, 60 ft. wide, divided into three bays of 67 ft. each, covered with domes rising out of pendentives. The aisles, 15 ft. wide, are separated from the nave by marble columns supporting a continuous groined arcade. From the easternmost bays of the nave, transepts of unique and interesting design project with additional entrances. Two larger chapels open right and left out of the transepts, with side aisles giving access to the sanctuary and to the sacristies.

Over the sanctuary will be suspended a gilded and decorated wooden crucifix, 30 ft. high, with paintings of Christ, the four evangelists, and the "Mater Dolorosa"—this will be the dominant note of the whole interior. The baldachino, flanked by eight monolithic columns resting on pedestals taking a semi-circular form, bears a marble canopy. The High Altar is a solid block of Cornish granite, fine-axed over, 12 ft. by 4 ft. On the left side is the marble archiepiscopal throne on its own dais, modelled after the ancient one in the Lateran basilica. The pulpit has been executed in Rome, and is of marble, decorated with mosaics.

As regards decoration, two only of the side chapels are in a forward state of progress. In the Chapel of SS. Gregory and Augustine the altar and marble work are completed and the mosaic work is proceeding, while in the opposite chapel, that of All Souls, on the north side of the nave, the altar, with its reredos and pictures in *opus sectile*, is completed, and the finishing touches are being put to the mosaics of the vault and arches, which are from the cartoons of Mr. W. C. Symons.

Having described various works in hand or contemplated, the author drew attention to the working part of the Cathedral—the sacristies, strongroom, stores, registry, &c. Working drawings of a marble flooring of great beauty and originality had been completed by the architect, a portion of which only is to be carried out.

The most striking feature of the building is the west front, with its deeply-recessed entrance-arch of 40 ft. span enclosing the tympanum, which is to be filled with a mosaic picture. The entrance arch is 4 ft. wider in its span than that of St. Mark's at Venice, and is planned in receding orders, supported on columns whose entablature is carried across the entrance and beneath the three doorways, the doors for which are executed in teak, to be covered eventually with bronze plates. The upper portions of the front terminate again with domed turrets, and are flanked to the north by the campanile set back from the upper portion of the front. The latter has a delicate entasis. The upper portion is gathered from the square to an octagon crowned by a teak-framed cupola covered with lead, and terminates in the bronze archiepiscopal cross, some 10 ft. in height.

Mr. Hadfield concluded with a reference to the death of the architect. He had seen him the previous day at his office in the Adelphi, standing bravely at his drawing-table, and found him full of enthusiasm about the cathedral's progress. He showed him then the drawings of the great crucifix and the marble pavements. They were to spend the next day together at his home at Clapham Common; but in the evening Bentley had a paralytic seizure, and passed away in the early hours of the following morning.

Professor Beresford Pite said they had looked forward to that evening for some months with a great deal of interest—an interest which he was sure no one felt had been disappointed. They had had placed before them the work of a very interesting and beautiful life, and those of them who were accustomed to make an endeavour to read the man in the building and to dissect the thought from the form had discerned that there had arisen in our midst in London the work of a very singular man, of a powerful artistic character, and undoubtedly the work of a great man because in the midst of an almost entirely Philistine age. Under the auspices which had been described, and which seemed to him to be particularly happy as between the client and the architect, Bentley had carried out a work in which one could say there was not the slightest trace of the Philistinism of the age in which it was built. How far the philosophy which succeeded in abstracting itself from the spirit of the age which gave it birth was justifiable in the architect was another matter, but they had in their midst a work of art, a work of genius and character and power, which he thought they in London had good cause to be proud of, and for which they were, without doubt, thankful to those who had brought about its completion. He thought its usefulness was to be emphasised when they passed their minds back to the designs which were put before the public for this Cathedral of Westminster, and he had hoped that Mr. Hadfield would have thrown some light on the scheme for building a copy of the votive church at Vienna in London. Bentley's work as a Gothic architect they knew from Mr. Eastlake's "History of the Gothic Revival," and although he had only built small places in London or in places accessible to Londoners, they showed a remarkably refined mind and something of the strength of design they associated with Burges's work. Later on came that extraordinary church at Watford, and that in Cadogan-square, which revealed the fact that Bentley's mind was able to grasp the delicacy and refinement of the later Gothic work as well as the stronger and more forcible character of the earlier work. But from the church at Watford to this new cathedral was a very long cry indeed. They found the early stage of the Gothic revival and the latter reflected in Bentley's mind in his work, but the placing in his hands of this large commission evidently upset, for reasons we cannot discern, the whole of his preconception of an architectural ideal. Bentley, he imagined, worked in the Gothic movement with that ardent devotion and almost spiritual appreciation of the mission of Gothic art in England which actuated Pugin and other enthusiastic leaders; but they found all that disappear suddenly and the artist flung himself into Ravenna of all places—in the fever-laden marshes of the Adriatic—for the inspiration of a London cathedral to follow the Gothic revival. It seemed extraordinary indeed. He did not suppose that Bentley, for one moment, expected to set a fashion; but such a departure seemed extraordinary. He laid aside the traditions which had led him hitherto, and he looked within for the direction to express this extraordinary commission which had fallen to his hands. He had no doubt that, when they or their successors came to look back to the architectural history of the period through which they had passed, they would be filled with, perhaps, the same wonder as to why Bentley should have gone back; why he should have done as he had, for to him, at all events, it was one of the most interesting problems connected with that church. That he had gone back, and had gone back conscientiously, to the foundation of Christian ecclesiastical architecture in the East, they could believe so far as they could see, but he seemed to have laid aside the type of plan; he seemed to have avoided the central group which was invariably connected with the early Christian form of domed church, and to have centred all his attention upon designing a dignified nave. The scheme was original, so far as he (the speaker) could recollect; it was entirely without precedent, and so far entirely characteristic of the age in which it was built, because they could not work with tradition. But in spite of Mr. Bentley's wish to produce a building based on early Christian lines they had a Gothic nave of a church like that of the Cordeliers in Toulouse translated into a simple domed nave; based upon the same principle of lighting and buttressing, but cut loose from Gothic feeling in detail, and from any traces of Classic or Renaissance tradition. They could not conceive what dreams he had of beauty for that vault, and he suspected St. Mark's, Venice, on a great scale, emulated in mosaic, and in strong reliance on himself in the drawing of the mosaic. But that was gone, a thing of the past, not to be, and they had to be content with it as it was, magnificent in bare brickwork. The fine proportion and lighting were immensely impressive in effect, but it is one effect. There is no change; no transit; no central group. They appreciated being able to take pleasure in the cathedral without being troubled with the building up of every story in the design with more detail and piling up of order upon order until the required height was obtained. Proportion and massing of light being entirely relied upon, and on that the success of the interior depends. Unfortunately the plan cramped his exterior design, which did not express the real dignity of the interior. He half suspected that Bentley felt that himself, for there was more restlessness, more effort, and more determination to be fresh into the design with the exterior than with the interior. He seems to have been content to hide the domes, and to rely on the great mass of the nave with the lofty campanile, and to have exercised on that his affection and love. They had to take it as it was. They could not picture to themselves how it could have been otherwise, and that was, perhaps, the greatest test of its success. They might have their criticisms and their qualifications, but none of them could place themselves on Bentley's standing and say "This should have been otherwise; I wish it were such." This cathedral would be the subject of much criticism, and their friends would be consulting them about it. Clients, and relations, and friends around would be asking architects what they thought about this great cathedral, and they had to form one opinion or another, but the one thing which stood prominently, he was sure, in the minds of all intelligent architects and artistic persons was that here is a great work of a great man. Here is a fine architectural effect, and the embodiment of a great scheme for which they must be proud, and for which they must always be thankful. In conclusion, he moved a hearty vote of thanks to the reader of the paper.

Mr. Alfred East, A.R.A., said that probably he had been asked to second the vote of thanks, which he most cordially did, because he represented the man in the street—architecturally, he meant—and from that point of view he could not say too much in praise of the grand building of which they were all so proud. He felt in that building that a great artist had exposed or built upon a recognised form a study of the requirements of modern life without loss of dignity. He felt, too, that the preponderating expression of his artistic genius was simplicity and dignity. He thanked Mr. Hadfield for his tribute to the man because it introduced some interesting stories of the conception and the preliminaries which preceded the erection of the building. He also thanked Mr. Hadfield for the light he had thrown upon Mr. Bentley and his character, and of the circumstances which led to the final development of the scheme. As an artist, he probably shared with his fellow-craftsmen a keen interest in architecture. They recognised it as one of the great arts of the world which had impressed them as they visited any country, for they knew it represented the religion and manners and customs and history of the people. He felt that for this great cathedral, which it had been the privilege of a poet and an artist to design, they owed a debt of gratitude to Mr. Bentley for avoiding the possibility of a failure. It was a great thing in these Philistine days to see such a noble erection in their midst. In that sense he cordially seconded the vote of thanks to Mr. Hadfield for his interesting paper, and he did hope that the ultimate design of the architect might be carried out. Before he sat down he would like to say one thing that impressed him, and it was this. He hoped the decoration would be done by Englishmen. Let them stand or fall by their work. If they failed in the decoration of the interior, well, they must submit to the criticism of the world; but he believed they had amongst them men who could carry out the design of the architect, and he would like that opportunity, which came so rarely in their country, to be taken advantage of, and to see the work made a thoroughly English work.

Mr. Walter Millard remarked that Professor Pite had told them they had all to make up their minds about this church of Bentley's, and he had been trying to make up his mind. He began by saying to himself the worst thing he could think about it. He did not know that that was the right way to begin, but he did begin by thinking of the un-English fashion of it at first sight. For it was un-English to most of them. But that did not exhaust the question. To his mind, it was designed by a man who was essentially a student of architecture—a student of architecture who looked on the history of architecture as a whole, and who looked on the monuments of architecture for what they told him about themselves in the first place, and also for what they could suggest to him to do as an architect. Surely Bentley was not a student who merely looked on existing architecture to know what it was, and there to stop short; but he studied architecture further for what it told him to practise and do, and he thought the cathedral was an illustration of a man who pursued the study of architecture in that broad way. When they came to the building itself, he did not wish to be critical, but he could not help wishing somehow that Bentley's great power, of which the interior had given such proof, of producing fine effects, by simple means apparently, had been also exercised when he came to treat the exterior, especially when they considered the site and surroundings. The contrast between the treatment of the interior and the exterior had always impressed him as something he could not quite reconcile or understand, unless Bentley hoped that the surroundings themselves would change some day. Let them all hope they might. It was a site as little inspiring as they could well think of, and its chief merit was, he supposed, its cheapness. That being so, he still wondered why Bentley gave so much to the exterior, although, of course, they all knew he meant the interior to eventually surpass the exterior in richness and variety and everything else. After all, he supposed the point for us to consider was—What is the lesson it teaches us, this great building finished at the beginning of the twentieth century? Was it not, to an architect, self-reliance—self-reliance in his studies and in his work, and unwearying effort to get his work as right as he could? Did not Bentley wear himself out in his effort to do this?

The Chairman said they had had a most interesting evening, and were greatly indebted to Mr. Hadfield, who knew Bentley so well, for bringing that great building of his before them in so interesting a way. There was no doubt that the building was exciting a great amount of interest. That was not, perhaps, extraordinary, for a great cathedral could not be built even in the city of London without attracting notice, but it had undoubtedly attracted the interest of architects of all shades and opinions, and he believed it would have more influence upon the younger men who were now preparing as architects than any other building which had been erected in recent years. He imagined that one reason for that was that Bentley had to solve a problem which most of them from time to time had to solve—the old, old story of building a church for an ancient religion, but so to build it that, to some extent at any rate, it represented the modern needs and requirements of the present day. Then as Mr. Millard had rightly said, another point of great interest was, of course, that the man had built himself into his building, and, as Mr. Hadfield had told him, he believed that the building really was the end of his life, and that he bestowed on it all the knowledge, thought and vitality in him. They could not go round it (whether they liked it or not), either the inside or the outside, without seeing in every corner and in every arch, and in every bit of moulding and carving, the man himself in it. Another great point of interest he thought in it was that the plan had been the basis of his design, and they saw his plan working out its natural result in the sections and elevations of the building. He had let his construction influence his design, and he had let his design be influenced by his construction, and that appeared to him (the Chairman) to be the essential of true architecture. He thought they would all agree with what Mr. Alfred East said in expressing the hope that as Bentley had left such a magnificent field for decoration, so rare in England, the work should be done by Englishmen, and it would be very

interesting if Mr. Hadfield could kindly tell them whether he knew of any scheme that Bentley had left for that decoration. They knew, of course, that he was a master of that art as well as of the constructive arts, and that, if alive, he certainly would have designed, to a great extent, the motives of the whole of the decorations. He had heard it suggested that there was some such scheme in existence. They must all hope so, and, at any rate, that the mosaic decorations now going on formed part of some great scheme Bentley himself devised. They all knew that he left a magnificent design, which Mr. Hadfield had referred to, for the marble pavement for the whole of the church, and although they were told that only a part at present was to be executed, they all hoped in due time the whole design would be carried out.

The motion was then agreed to.

Mr. Hadfield, in reply, said his had been a difficult task. He could not presume to know Bentley's mind, as he was a man singularly secretive. If Bentley wished a thing he did it, but as a rule he was never a man to talk about his intentions. With regard to what Professor Pite had said as to his wonder of how Bentley came to do this thing, he could only say this, this Byzantine was no new thing to Bentley; and he knew that he was most enthusiastic about it, particularly as to the work in Burgundy, the German Renaissance, and the North Italian. Bentley knew it years and years ago, and he was one of those men who never took a thing up to be a fad. If he took it up he went right through with it. The history of this great cathedral was that Cardinal Vaughan asked him to do a certain thing, and Bentley had told them why he did it, and he went to Italy simply to concentrate all the ripe knowledge and studies of years. He could go back to the sixties and seventies when colour and Ruskin's ideas were talked about in that room, and Bentley was most enthusiastic in those days. Well, he never dropped it, and his point used to be that if a man went into a thing of that sort he had to learn the grammar of his art. His great idea was for a revival of the traditions of Pugin, and he was loyal to that, although he very often poked fun at people over it. Well, the history of the thing was that he was called upon to do a certain thing, and he took this Byzantine style, and he built a great ecclesiastical church, and he had left his life in the church. With regard to the question of the exterior, perhaps Bentley in that had played a little to the man in the street.

The Chairman announced that the next meeting would be held on March 30, when Mr. H. Porter would read a paper on "Fire Prevention," and the Science Committee would present their Report on the Fire Regulations.

THE SANITARY INSTITUTE:

SEWAGE DISPOSAL.

ON the 11th inst. a meeting of the Sanitary Institute was held at Parkes' Museum, Margaret-street, W., when Dr. George Reid, M.D., D.P.H., Medical Officer of Health, Staffordshire County Council, opened a discussion on the subject of "Sewage Disposal and the Qualities Essential in a Sewage Effluent." The chair was occupied by Colonel T. Walter Harding, one of the members of the Royal Commission on Sewage Disposal now sitting.

Dr. Reid said that from time to time attempts had been made to arrive at what might generally be accepted by experts, if not defined by law, as a uniform standard of purity for sewage effluents, but, so far, these efforts had been fruitless. Personally, he was not disappointed that the attempt did prove unsuccessful. Notwithstanding difference of opinion, however, regarding the wisdom of establishing a uniform standard of purity, hitherto experts had not differed as to the minimum essentials in a good effluent, and he thought it might be said that the progress which had been made of recent years in the direction of simplifying the means by which the end in view might be attained had been little short of phenomenal. The object they had striven to arrive at hitherto had been the production of a non-putrefactive effluent containing practically no matters in suspension, one which was non-destructive to fish life and had, in itself, sufficient available oxygen to mineralise, through the action of the nitrifying organisms present in it and in the stream into which it was discharged, any dissolved organic matter still remaining unconverted. This was the minimum; but in certain cases—for example, in Staffordshire, where in the populous places the volume of sewage to be disposed of exceeded the volume of the streams—they endeavoured to carry the nitrifying process further in order to have a reserve of available oxygen for the conversion, as far as possible, of polluting matter which of necessity reached the streams beyond that which was contained in the sewage actually submitted to treatment. But in the light of recent events, were we still as confident that we knew what was, or rather what might be required of us, and could we any longer congratulate ourselves on having arrived at something like a solution of our difficulties? Were there not indications that, after all, we had not fully realised our responsibilties, and that in future we might be called upon to accomplish a great deal more than had hitherto even been dreamed of by the most exacting enthusiast on the subject? Some five years ago, in view of the enthusiasm with which the introduction of modern biological methods was being advocated, a Royal Commission was appointed to inquire into the whole subject, and after three years' work an interim Report was presented, for which those who, like himself, had for years been struggling to bring about much-needed reform in the methods of disposal in operation, were thankful; for at least the fact was authoritatively recognised that land treatment was not an essential element in sewage disposal, and that authorities need no longer be called upon, as many had been previously called upon, to perform impossibilities. In the autumn of last year the Commission published a second Report, and he was disappointed in finding that it contained no reference to the questions of practical interest which they were hoping the Commission would elucidate. He ventured to suggest that at least five-sixths of the matter had a far more direct bearing upon other public health problems than the one which led to the Commission's appointment. If they had reason to suppose that the Commission intended that the Report should be accepted simply as a record of scientific work for the information of health officers generally well and good, but from the general trend of the questions put to witnesses by the Commissioners, and from the fact that in the Report itself the results of the working of experimental filters for the removal of bacteria from final sewage effluents were actually set forth, he was afraid that the Commission might ultimately recommend that, in certain cases, if not in every case, the process of purification should include the freeing of the effluents from organisms before their final discharge from the disposal works. At any rate, whether this anticipation be warranted or not, the publication of the Report had already resulted in its being gravely suggested by well-known public health specialists that, in addition to the purification process proper, if he might so term it, sewage should undergo a final process of water filtration before being discharged into a stream. Indeed, one well-known bacteriologist and lecturer on public health had gone so far as to say that if no other means would suffice sewage effluents must be boiled.

In order to show that his apprehensions were not groundless, Dr. Reid then referred to certain paragraphs in the Report of the Royal Commission. Dr. Houston, who conducted a large number of experiments for the Commission as to the bacteriological qualities of effluents from various methods of sewage treatment, said:—

> 'The effluents from septic tanks, intermittent contact beds, continuous filtration beds, &c., contain an enormous number of bacteria. . . . In not a few cases the bacteria are practically as numerous in the effluent as in the raw sewage.' Further, Dr. Houston states that 'the inoculation of animals with the effluents from bacterial beds seems to show that they are nearly as pathogenic as crude sewage.' As regards land treatment, Dr. Houston said, 'the treatment of sewage on land, although, perhaps, more satisfactory from the bacteriological point of view than its treatment in bacterial beds, would not seem to by any means entirely remove the danger arising from the discharge of effluents into potable rivers.'

As regarded effluents from chemical processes of treatment, the Report stated that it might be found to be the case that the addition of chemicals might be carried to a point sufficient to destroy pathogenic organisms without rendering the sewage insusceptible to subsequent purification by bacterial means, but that before this point could be settled much experimental work must be carried out. As to the question of standards, Dr. Houston said that "a bacteriological standard in the case of drinking-water streams is certainly called for, and, indeed, is far more important than a chemical one," but that a chemical standard should always be imposed. In the case of non-drinking water-streams, Dr. Houston said "except where oysters and other shell-fish, which are eaten raw, are concerned, the bacteriological character of an effluent is of secondary importance." He qualified this opinion in a footnote, however, in the case of sewages which might contain anthrax spores. In discussing the ways and means of rendering a potentially dangerous effluent actually or relatively harmless, Dr. Houston referred to fine filtration and the addition of chemicals as two alternatives. As regards the former, he said that "presumably it would cost as much to satisfactorily filter the sewage effluent of a town as it would cost to filter the water-supply of the same town." Probably we might infer from this that Dr. Houston contemplated the filtration of the dry weather flow only. The Report also contained an account of numerous experiments by Professor Boyce and others as to the effect of fine filtration in removing bacteria from effluents. A further large section of the Report set forth the observations of Professor Boyce and others on the self-purification of the river Severn below Shrewsbury from a bacteriological point of view. The inference to be drawn from the paragraph as to this was that less injury would result from the discharge into a stream of the crude sewage of 29,000 people than from the discharge of the treated, therefore, non-putrefactive sewage of a population of 420,000 odd. All he could say was that if he were given the choice it would not be the crude sewage of 29,000 people which he should select in the case of a stream over which he had control as an alternative to the treated sewage of a population, no matter how large. Beyond mere casual mention, the alleged injury to the public from the discharge of a non-bacteria free effluent into a stream was not discussed in the Report. They were all agreed, he imagined, that there was real risk in taking a public water-supply from a stream into which a sewage effluent had been discharged. This being the case, it followed that steps must be taken to safeguard the public against such risk, and the question was by whom were such steps to be taken? Let them suppose that this duty was imposed upon the sewage disposal authority. In such an event it was perfectly obvious that to provide a water purifying plant for the dry weather flow of sewage only would be quite useless, for, during storm periods, an enormously increased volume of sewage would be discharged into the stream, every gallon of which would have to be similarly dealt with. At present, according to the Local Government Board's requirements, a sewage disposal plant must be capable of fully treating a volume of sewage equal to three times the dry weather flow, and, less fully, a further equal volume, bringing the total volume treated up to six times the dry weather flow. This might be all very well so far as sewage purification, as we regard it, was concerned, but from a bacteriological point of view a discharge from sewer storm overflows greatly in excess of this would have to be provided for if the sewage disposal authority was to be held responsible for a bacteriologically pure effluent. For the sake of argument, however, he would limit the volume to six times the dry-weather flow in order to arrive at the probable minimum cost of a sewage-disposal plant on such lines. He believed that a reasonable amount to allow for a sewage-disposal plant was about 15s. per head of the population, and he was told that water-filters cost from 2s. 6d. to 3s. per head. The latter figures, however, were based upon a consumption of 25 gallons per head, whereas at least six times that volume would have to be the basis in the case of the sewage effluent water-filter plant, so that the actual cost per head of such a plant, basing the estimate on the smaller figure named, would amount to 15s. per head. In other words, the addition of the extra plant would exactly double the capital cost of sewage-disposal works, and, of course, add considerably to the working expenses. But in the vast majority of cases even this large additional expenditure would not cover the cost, for, as a rule, by the time sewage had been treated, the

fall then available would not allow of the adoption of a further filtration process, so that pumping would have to be resorted to, with its attendant large capital outlay and greatly increased maintenance expenditure.

The alternative to filtration, according to the experts of the Commission, was chemical sterilisation; but at present they were not in a position to suggest any specific method. We might take it, however, that no matter what chemical method be suggested, the cost would be very great; besides, it was questionable whether certain risks which would attend such a proceeding could be effectively guarded against. But in the event of this onerous duty being imposed on the sewage disposal authority, would the water authority then be relieved of the responsibility of filtering the stream water? And if the answer, as undoubtedly would be the case, should be in the negative, he would further ask, then why go to such enormous expense seeing that the necessity for subsequent filtration of the water is not thereby done away with? Perhaps the answer to this last question was to be found in the other risks mentioned by the bacteriological experts, namely, the casual use of river water for drinking purposes and for utensil washing. His answer then would be that it was the duty of every Sanitary Authority to see that every household was provided with a satisfactory water-supply, and if certain misguided people should think fit to run the risk of using dangerous river water for domestic purposes they must take the consequences. The same held good in the case of bathing, as authorities had the power to provide public baths, and if a clean river was available places might be specially set apart for public bathing.

Dr. Reid then referred to the question of animals suffering from drinking polluted river water; and food supplies such as oysters and watercress. He hoped it would not be supposed that he wished to discredit any attempt to free our drinking-water streams, as far as possible, from dangerous sewage organisms; all he maintained was that in the light of our present knowledge, by no conceivable process could this be accomplished at sewage outfall works. It did not follow, however, that another way out of the difficulty might not be found, and the remedy in his opinion, both on scientific and practical grounds, should be applied at an earlier stage, and should be directed against the introduction into the sewage of disease organisms.

The Chairman said he was afraid Dr. Reid had raised a bogey as to the second publication of the Royal Commission. That publication was a mere formal Report covering the publication of some very interesting reports by experts made to the Commission; they were not reports by the Commission, but reports made to the Commission, and they did not bind the Commission, though the attention would be given to them that their importance deserved. He believed that the reports had made it clear that in considering the quality of an effluent we were bound to look beyond chemical standards. There was no doubt that with all bacteriological processes there remained in the effluent a large number of germs which might or might not be harmless. The whole subject was as yet in an uncertain condition, and he would ask them to have some patience in awaiting the final Report of the Commission.

Professor Henry Robinson, in moving a vote of thanks to the lecturer, said he agreed that there was a feeling of disappointment that the information which had been obtained by the Commission did not bear directly upon what engineers and Medical Officers of Health had been looking for for so long. He hoped that the further investigations of the Commission might be directed more to the solution of some problems which engineers and Medical Officers of Health had to advise upon. The interim Report, however, the last Report, contained one or two paragraphs which would slightly help.

Professor Bostock Hill said that he took it that the object of Dr. Reid's remarks was to protest against an idea which was apparently gaining ground, not so much in the minds of the members of the Royal Commission, as in the minds of the experts who have been advising that Commission, and so far Dr. Reid had not raised a bogey. It was difficult to get Local Authorities at the present time properly to undertake their duties, and if it was to be suggested that works of enormous expenditure and improved value were to be undertaken, in addition to ordinary up-to-date measures, he was afraid the problem of the cleansing of rivers would be set back.

Mr. H. A. Roechling said that Dr. Reid referred to the first Report of the Royal Commission, and said that there it was officially recognised that land formed no essential element of sewage treatment. He (the speaker) had not been able to discover the source of such a statement. Dealing with the land, which the Commissioners placed first in the list of methods for treating sewage, the Commissioners said they doubted if any land was entirely useless, and they went on to say that clay and heavy peat land were generally unsuitable. At Leicester, however, they had been able successfully to cope with the sewage on the thickest clay land for something like nine years, with a population increasing from 114 to 145 persons to the acre. It was a heavy boulder clay. Dr. Houston, in the second Report to the Royal Commission, made this statement about land:—"It appears possible, with land of proper quality, and by efficient management, to produce remarkably good bacteriological results." In some cases the results were so good that if it were not for the knowledge of its source, the effluent might be classed as a potable water of more than average purity. On the Continent, too, it was believed that land had the power of removing pathogenic germs, and at one sewage farm it was a common thing to drink the effluent. As to the findings of the Royal Commission concerning artificial methods, their conclusion was that it was possible, by artificial methods alone, to produce effluents which would, according to chemical standards, be considered as good; and they also said that there were cases in which the Local Government Board would be justified in modifying, under proper safeguards, the existing rule in regard to the application to land. We had to deal, not with the abandonment of land treatment, but with its modification under proper safeguards and that, too, only in special cases. He did not think the Commissioners held out any hope that they would reverse that conclusion, and what had to be done now was to consider the question of the safeguards. The second Report of the Commission was a very valuable one, and the views expressed in it ought to be studied. He agreed in theory with Dr. Reid as to the exclusion of pathogenic germs from our effluents, but, in practice, by the method advocated by Dr. Reid it would be long before it would be possible to admit the effluent safely into our rivers. Had Dr. Reid paid more attention to land, and had he not read into the Report of the Royal Commission opinions which he (the speaker) could not find there, he would have been more favourable to those conclusions. Land methods had been greatly abused in this country, not because they were at fault, but because the management of the land was at fault. Land had the power of removing pathogenic germs, and of rendering the effluent harmless.

Mr. Scott Moncrieff said he sympathised with the views expressed by Dr. Reid. It had been forgotten that public opinion was being misled, not only by the Royal Commission, but more especially by the reports of the experts to that Commission. If Dr. Reid had raised a bogey it was due to the totally unguided labours of expensive experts. Take the question of drinking water—in London, say. If we were to attempt to raise the standard of purity to a deep-well standard in the case of ordinary streams it was perfectly impracticable; it was not practicable in the case of the Thames, even if there were no sewage pollution at all. At the present season—the season for manuring the land—with the Thames more or less in flood, there was no doubt that the river was full of organisms coming off the land. Every one was waiting anxiously for a further Report of the Royal Commission, so long delayed, giving some distinct indication of their views as to the way in which a first-rate effluent on a modern standard might be obtained, and without discussing the question of whether it might contain a certain number of pathogenic organisms which, in the nature of things, must exist in the streams, whether they were polluted by sewage or not.

Mr. Fowler, of Manchester, said that Mr. Roechling appeared to forget that in Lancashire and elsewhere there was not so much land to be had as in Leicestershire. He did not think that some of the attacks made on the Royal Commission were justified. The Commission were watching carefully a number of works where sewage was being purified, and considerable time was necessary for the purpose.

Mr. Archibald and Mr. Lowcock having spoken, and the vote of thanks having been agreed to heartily,

Dr. Reid, in reply, said he thought he was justified in his remarks about the second Report of the Royal Commission, and he did not think he had raised a bogey. As to land, the Royal Commission certainly said that it was not essential for the purification of sewage that it should be applied to land, and that there were methods for the disposal of sewage without application to the land; and the Local Government Board, he was glad to say, were acting on that. It was true that the Commission said that land of a certain quality would produce a better effluent than artificial filters; that was so, but such land was not to be found all over England. It was the business of those who took water from an impure stream for drinking purposes to make it pure.

The Chairman said he agreed with Dr. Reid that five-sixths of the matters gone into by Dr. Houston and Professor Boyce were outside the scope of the work of the Commission, but they could not be blamed for going fully into the matter. The work of the Commission was very laborious, and if those who were anxious to get the final conclusions knew how vast the work is they would be a little more patient. The Commission had finished their study of land processes and were waiting for data in connexion with the so-called artificial processes. They had a large number of works under observation, and he hoped that when they reported they would make a very useful contribution to the study of the question. As to the position of Local Authorities in regard to trade effluents, the Commission had signed a Report which might be of great interest on that question.

A vote of thanks to the Chairman brought the proceedings to a close.

CARPENTERS' HALL LECTURES:

MODERN FURNITURE.

THE third of the Carpenters' Company's spring lectures on matters connected with building was given at Carpenters' Hall, London Wall, on the 5th inst., by Mr. J. A. Gotch, whose subject was, "Modern Furniture, Movable and Fixed." Sir C. Purdon Clarke, Director of the Victoria and Albert Museum, presided over a large audience and briefly introduced the lecturer, remarking that Mr. Gotch had done very much to place before students and others the wealth of Renaissance architecture.

Mr. Gotch said it might be doubted whether fifteen or twenty years ago an audience of any kind could have been brought together to listen to a lecture on the subject of furniture; and that that was no longer the case pointed to the great awakening of interest in matters relating to art. The effect of this awakening was twofold. Exhortations from more or less eminent critics, together with improved design, had stirred the perceptions of the public; the keener appreciation of the public had re-acted on the designers, and encouraged them by making them feel that their efforts met with more intelligent criticism than in former days. But we were not free to-day any more than our ancestors were in the past or (we might safely say) our descendants will be in the future from that shallow species of intelligence which approves of certain things because they are fashionable, and not because of their inherent good qualities, which adopted particular forms because they were the badge or the shibboleth of a certain set or clique who were supposed to be imbued with an extra large amount of artistic perception. But it was clear on every hand that the appreciation of beauty and fitness was more widely spread than it was a quarter of a century ago. To take one instance: whereas some years ago the interesting designs published in the building papers would be the work of a few well-known men probably living in London, now hardly a week passed without some agreeable design appeared of which the author not only lived in the provinces, as they were called, but lived there in comparative obscurity, so much had vernacular design improved in architectural matters.

For a considerable period now there had been a rage for old furniture, and when one reflected on the amount of the handiwork of certain well-known makers which had passed

through the market during the last few years, the labours of Hercules sunk into insignificance beside those of Chippendale, and Briareus with his hundred hands would have been consumed with mortification could he have beheld Sheraton at work, so swiftly and with such profusion must the latter have produced his wares. But this rather morbid desire to be surrounded with furniture of antique appearance would seem to be about to succumb to an anxiety to possess modern furniture. Modern furniture dealers appeared to be doing a thriving business in England, and there had been an enormous demand on the Continent for furniture made from the recipes or prescriptions of the New Art. Whether the makers of the genuine antique goods had experienced a corresponding depression had not transpired at present.

There was no need to enter at much length into either the merits or the demerits of the New Art movement. It exhibited a real desire for novelty, and one of its fundamental principles in the English version was the admirable one of simplicity; but one was sometimes forced to the conclusion that in the endeavour to eschew familiar methods of decoration and to shun meretricious display, there had been achieved, with much ingenuity, a considerable absence of beauty and interest. It was as though no desirable mean could be found between the fantastic, artificial coiffure of the eighteenth century and a bald head, or between a Louis XVI. cabinet and a kitchen dresser. The negation of all the accustomed methods of producing effect was, at bottom, affectation, and affectation of a rather annoying type. Simplicity and directness were admirable, but behind them we want the feeling that they were the result of restraint, not of inexperience; that they were the deliberate choice of a grown man, not the involuntary effort of a child. To make simplicity most effective, it wanted a certain admixture of fancy. Some of the work of those who range themselves beneath the banner of the New Art suffered, one could not help feeling, from the defect of overdone simplicity; but behind all the affectation of this particular cult there was a real, genuine desire for improvement in design, and undoubted ability to produce it.

Of course, the New Art had affected modern furniture, notably on the Continent. He used the term "New Art" because it had been so widely adopted, but the phrase was a little unfortunate, for the whole of history pointed to a gradual evolution in all things. New styles in the domain of Art had grown out of what went before, and, as a rule, were hardly recognised until they were well established. An art that called itself "New" seemed to require something more to justify it than anything that had been seen up to the present.

But the movement had affected modern furniture, and, in order to judge of its influence, it was desirable to consider what principles should guide design in furniture; in other words, what qualities furniture should possess. The vast majority of people who use furniture were ordinary persons, and they liked to have things which were convenient and comfortable. Tables should not fall over too easily (unless they happened to be supporting certain modern vases at the time). Chairs should be comfortable, especially if they were "easy chairs;" they should not inflict unexpected knocks and bruises, and they should be fairly light in weight, and yet strong in construction. Doors of cupboards and wardrobes should open and shut easily, so also should drawers; trays should slide out and in without raising the suspicion that the door of the wardrobe would have to be taken off its hinges. In asking for comfort, it was not to be supposed that every chair was to be an easy chair, but rather that it was to be suitable for its purpose. There used to be folding-chairs which were apt to throw the stranger, in a most disconcerting way, on to the floor unless he sat well back in them, and there are soft lounging chairs, very proper for the boudoir or the smoking-room, but quite out of place in a drawing-room, since no one but an athlete could rise from them save through a slow and laborious process, quite unsuitable to the sudden emergencies which sometimes arise in a drawing-room.

Most people would agree as to the propriety of establishing convenience and comfort as the basis of furniture design, but there would be a wide divergence of opinion as to the best methods of expressing those qualities, and here we get into the realm of taste, about which it was useless to argue. Still, the pursuit of convenience and comfort in furniture seemed to lead to simplicity, cleanness of line, an absence of features likely to retain dust, a certain display of fancy, and constructional propriety—for sins against construction would sooner or later be exposed and punished, involving the annoyance and discomfort of those who used the furniture. The desire to avoid dust and dirt led to a prevalence of polished surfaces, and this again to the use of various kinds of wood susceptible of taking polish. It also pointed to the avoidance of complicated mouldings and a sparing use of carving. The ideal piece of furniture, therefore, would be simple in outline and treatment; its form graceful, its colour pleasant, and here and there would be a fanciful touch enough to show or suggest that the designer had some feeling for design. Much of the ancient furniture which gave so much pleasure satisfied these conditions, and, partly for that reason and partly because of its excellent workmanship, it had survived the changes of this transitory world and had lasted to our own time. But all ancient furniture was not truly æsthetic in design and construction; there were not a few pieces to be met with which were faulty in both particulars. It would be a mistake to accept all old examples as perfect, but the bulk of it had survived because of its fitness.

How far did modern furniture possess these qualities? At the outset the question occurred "By whom is modern furniture designed?" He excluded from the term "modern furniture" all that immense amount of what was called "factory stuff," which filled the windows of the ordinary furniture shop, and depressed the spirits of the enlightened beholder. As many people bought it, it was to be supposed that they did not dislike it, though it might be fairly supposed that they do not actually like it. They took it because it was there, and because they had not been trained to discriminate in matters of design. But where was the better class of furniture designed—the kind of furniture that was really worth discussing? Much of it came from the drawing offices of firms like Messrs. Warings and Heal & Son, and some of it from the pencils of amateurs, whose work, it might be said without disrespect, appeared rather amateurish beside that of men who were in close touch with the sale of furniture. It was one thing to design furniture, but another thing to sell it: the latter implied having an article which stood the test of experience and of constant wear and tear. On the other hand, it was essential that the designer of furniture should have the architectural spirit—that his design should be based upon construction and governed by constructional propriety, and that his ornament should be applied with discretion and should harmonise with his lines of construction.

In order to illustrate the subject of modern English furniture, he had approached several eminent firms of furniture makers, and he was indebted to Messrs. Gillow, Messrs. Warings, and Heal & Son, for their courtesy in enabling him to illustrate this part of his subject. He found that the work of these houses was distinct in its character and typical of the "streams of tendency" in furniture design. His object was to ascertain upon what lines modern furniture was designed—furniture, that was, which found a large sale among the general public, and not furniture which was specially designed for a particular person or for a select circle. The result was that at one of the firms he found that nearly everything was a reproduction of old examples: beautiful things, but not new in design. The same result was obtained by a visit to a firm in Edinburgh, and the conclusion that he derived was that a vast amount of the best modern furniture was closely copied, if not actually reproduced, from old examples. At another firm, the prevailing idea was to found design on the old examples, but to adapt it to modern needs, making sufficient changes to meet new requirements, but adhering closely to old types and to old methods of obtaining effect. At the third firm the designers had emancipated themselves more thoroughly from the old forms, and, while subordinating their ideas to the practical requirements of the various pieces of furniture, they imparted a character to their work which proclaimed at once that it is modern—the most casual glance showed that it is not ancient. Which kind of work was the most satisfactory was a matter of individual taste, but probably every one would agree that a careful development on the lines of the best old examples was more satisfactory than those bold attempts at originality which found so much favour forty years ago, at the time of the 1862 Exhibition. The illustrations of furniture to be seen in the official record of that Exhibition—illustrations which received the highest commendation—made one wonder whether a standard of good taste could ever be established, and caused one to revert with still firmer faith to the principles already laid down.

In the course of his address the lecturer showed and described a large number of lantern slides of furniture, including l'Art Nouveau furniture presented to South Kensington Museum by Mr. Donaldson. That gift had aroused much controversy and opposition, but Mr. Donaldson's reason for presenting the furniture was that as fashion had set in in favour of it, and as there was such an enormous sale for it on the Continent, English craftsmen ought to have an opportunity of studying it.

Speaking of the chairs, he said that all attempts to design them on new lines seemed to lead back to old types. The stuffed luxurious chair is modern, but stuffing did not lend itself to a great variety of form, nor to elegance.

What conclusions do we arrive at in regard to modern furniture? It might not unjustly be said that, apart from the cheap stuff which filled so many shops, there was a genuine tendency to advance, sometimes along the lines which had already been traced out by our predecessors, sometimes along fresher tracks. Some of the more adventurous spirits, who depart from the ancient ways, did not escape the pitfalls which experience, it was to be presumed, would eventually teach them to avoid. But in any case, we need not be ashamed of the part which English craftsmen are taking in the struggle. Although there was plenty of space for still further advance, we might congratulate ourselves on that wider diffusion of knowledge and appreciation in matters relating to art to which modern furniture was one of the many witnesses. As to foreign design, he should be sorry to see that style take possession of our English craftsmen.

A vote of thanks having been accorded to the lecturer and the chairman, the proceedings came to an end.

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS—A sessional meeting was held on the 12th inst. The prizes were distributed by the President, Mr. Alfred Darbyshire, to the students who had been successful in the various competitions of the past year. The names of the winners of the last competitions were announced, as follows:—For the design for the cover of the new Sketch Book, Mr. J. Harold Gibbons; Mr. Holden's prize for a design for a free library, Mr. Harry Moss; the monthly class of design for a market-hall, Mr. Harold Hill and Mr. C. H. Potter bracketted equal.—A paper was then read by Mr. Isaac Taylor on the students' work of the past year. The drawings, some sixty in number, were hung round the room. Mr. Taylor congratulated the Society on the excellent work to be seen in the room, and urged students who did not at present enter into these competitions to give their attention to them in future. The Society gives about 40*l.* a year in prizes to be spent in books, so that, besides the useful training here was an excellent opportunity of establishing a first-class library. A further prize of 5*l.* 5*s.* was this year offered by Mr. J. W. Beaumont for sketches and measured drawings suitable for publication in the Sketch Book, which it was hoped to make a first-class publication. Turning to the sketches exhibited, Mr. Taylor, whilst realising the value of artistic sketching, thought that an architect's sketch-book should have far more outline diagrams, with sketches to large scale, of details and mouldings. There should be less of the photograph-like general views that students were so fond of making. The importance of measured work was also insisted on. The lecturer then gave a short criticism on each of the drawings. Mr. J. W. Beaumont, in proposing a vote of thanks, spoke of his great interest in the forthcoming issue of the "Sketch Book," and pointed out that it rested with the students to make it successful. Mr. H. B. Laycock thought that some of the condi-

tions for the competitions should be more explicit, instancing the cottage hospital, where it was not stated whether dayrooms, operating-room, or accident ward were to be provided. Mr. Salomons also spoke, and the lecturer briefly responded.

LIVERPOOL ARCHITECTURAL SOCIETY.—A lecture on "The Ancient Churches of Wirral" was delivered on the 16th inst. by Mr. L. Hobson under the auspices of the Liverpool Architectural Society, Mr. P. C. Thicknesse presiding. In these days of rapid locomotion, people were too apt, the lecturer said, to go long distances in search of the picturesque in architecture while it was accessible on much more easy terms. He assured those students who were going in for examinations that they would find within the Wirral district most of the answers set by examiners. In proof of this, he presented on the screen a number of very interesting views, among them being one of St. Andrew's Church, Lower Bebington, which he spoke of as the happy hunting-ground of architectural students.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—An ordinary monthly meeting of this Society was held on the 12th inst. in the Lecture Hall of the Literary and Philosophical Society, Leopold-street, Mr. T. Winder presiding, when Mr. R. E. Leader, B.A., gave a lecture on "Surveyors and Architects of the Past." He said that architects and surveyors of to-day had been far too busily engaged in the work of the present to concern themselves greatly with the worthies of bygone generations, and there might, therefore, be some advantage in collating and arranging in accessible form such information as was available. Without inquiring which was the elder of the allied arts represented by the Society, locally surveying was undoubtedly entitled to claim priority. The painstaking, and to the antiquarian invaluable, surveys of the Sheffield and Worksop estates made by direction of the Earl of Arundel in 1637 were executed by John Harrison, a master of his craft. He had in vain sought an answer as to who John Harrison was. Equally shadowy were other old surveyors whose names were occasionally met with, *e.g.*, Dennis Lee and Im. Halton, in the seventeenth century; it was only when the eighteenth century opened that firmer standing ground was reached. Robert Wilson (floruit 1704-1733) might be regarded as the father of Sheffield surveyors; he was employed by the Duke of Norfolk, the Town Trustees, and the River Don Navigation and other principals. Among his contemporaries were John Gelley or Getty (1711-1725), Thomas Smith (1710-22), and William Kitchin (1728-30). The first-named in 1723 made a map of the boundary between Yorkshire and "Darbyshire." The other two were probably schoolmasters, the local surveying of the eighteenth century being the natural application of the mathematical knowledge of the schoolmasters of the period, as a long line of schoolmaster-surveyors showed, including Ralph Gosling, to whom abiding gratitude was due for his plan of Sheffield in 1736. Other surveyors working in Sheffield from 1730 onward, included John Smilter, who, without being disrespectful, he might say, represented the market garden or kail yard style of cartography. William and Joseph Dickinson (1737 to 1767), he thought, were Smilter's pupils, and Joseph, in 1750, published an interesting map of the south part of Yorkshire, a copy of which could be seen in the Norfolk estate office, and executed a good many surveys in the district. It was about that time that Thomas Oughtibridge flourished, who issued a quaint picture of the town from Bridgehouses some time between 1720 and 1740. Ralph Gosling, another well-known early cartographer, was the son of a Dronfield yeoman, and was born in 1693, and the family of the present Master Cutler traced its connexion with the Goslings. He was a schoolmaster, as was John Eadon, a contemporary surveyor. Two brothers, S. and N. Bucks, issued in 1745 an "East Prospect of Sheffield"—a well-known picture of the town drawn from Park Hill. They also published Bucks "Antiquities," including over 400 castles and abbeys and nearly 100 cities or towns. Predominating over, but contemporary with, those surveyors were the early Fairbanks, a notable Quaker family. The name met them everywhere, and as there were three, if not four, William Fairbanks in successive generations, it was difficult sometimes to avoid confusion. The earliest known plan signed W. Fairbank was 1733. The earlier workmanship was crude, and in striking contrast with the leisurely care characteristic of the later Fairbank drawings. The patient and conscientious care bestowed on his work by Fairbank's son brought the reward of complete mastery, and he did a large amount of work, and was favoured with special interest by the Duke of Norfolk. The younger Fairbank had ten sons, to two of whom, William and Joseph, born between 1770-1780, special interest attached. William entered into partnership with his father, and the lecturer mentioned, as an instance of his work, the excellent large scale map of the parish of Sheffield in 1795 published by Fairbank & Son. From 1801 to 1827 the firm of W. & J. Fairbank, as it subsequently became, was actively employed. To that period belonged the large scale map of the town and environs of Sheffield published in 1808. Josiah became surveyor to the Town Trustees and the Church Burgesses, and was largely engaged in work for the Duke of Norfolk, Earl Fitzwilliam, and the Duke of Rutland. How wide the Fairbank connexion had grown was shown by the increase of fees which took place. The hours which their assistants had to keep would make the hair of some present day youths stand on end. Mr. Winder had told him that within his recollection, when Mr. Marcus Smith presided over the surveying department of the Duke's office, work began at nine o'clock in the morning, and often continued until bedtime. The Saturday half holiday was a thing unheard of. In 1828 Josiah Fairbank left his brother and started in partnership with his son in East Parade. Death and removal from the town somewhat thinned the family, and its professional eminence was maintained by Josiah Forster Fairbank, M.I.C.E., and by him the generations of the past were brought into touch with to-day. Other names in the latter half of the eighteenth century, and the earlier years of the nineteenth, were few and far between. There was William Jessop, who was retained in 1785 for his advice on the water-supply schemes. Others in succeeding years included Benjamin Outram, S. Theobald, Bingley, Thomas Schofield, Joshua Bishop, John Tomlinson, John Leake, J. Taylor, Paul Bright, and Marcus Smith. In 1784 was born Mr. John Fowler, of Wadsley Hall, the honoured founder of the St. James's-row firm, and father of a race of distinguished engineers. Turning to architects, he said that practically there were no local architects until some sixty or seventy years ago. Taking a survey of their older public buildings, one was struck by the regularity with which, whenever anything more important than dwelling-houses within the scope of intelligent masons was required, architects were imported from other places. The explanation was found in the geographical position of Sheffield and the humble standing of the inhabitants. When St. Paul's church was built in 1719, Mr. Platts, who erected Wortley Hall, was called in; when the parish church had to be repaired in 1777, Mr. Thomas Atkinson was fetched from York. To Mr. Charles Watson, of Wakefield, was entrusted the Waingate Town Hall (1805), and the Infirmary (1793) was entrusted to Mr. John Rowstone, of Birmingham. Woodhead and Hunt, of Doncaster, were the architects for St. George's church in 1821, and the Surrey-street Masonic Hall (1823), and the Grammar School in Charlotte-street in 1825. Carver-street Chapel (1804) was the work of a circuit minister who had been intended for an architect, and so on. Some of those outsiders did establish themselves in the city, but a race of native architects was rising, and as the surveyors had come from schoolmasters, so the architects came from builders. That was strikingly so in the case of the Drurys and Flocktons. It was not until 1825 that Edward Drury & Sons were designated architects as well as builders. In 1833 William Flockton laid aside the cap and apron and established himself as an architect. The Mount and Wesley College (1836) showed his native talent. There was, too, Mr. Samuel Worth. The name of Mr. J. G. Weightman first appeared in the directory for 1833, and in 1837 Mr. M. E. Hadfield was at the Corn Exchange. The elevating influence they exercised on the architectural renaissance of the town was reinforced in 1845, when the late Mr. Thomas James Flockton brought to his father's office a fresh knowledge obtained from a larger sphere than the city. With the firms of Weightman & Hadfield and Wm. Flockton & Son opened a new era in the architectural development of the city, and their influence was unmistakably stamped on its streets. The advance marked in their career would be shown by a comparison of St. John's Park with St. Marie's, Norfolk-row, or Holy Trinity, Wicker, with St. John's, Ranmoor. There were other names in the list of fifty years ago. John Frith, Charles Unwin, Rooke Harrison, Thos. Fred Cashin, Edwin Falding, George Wilson, Alfred Scargill, &c. But it would be invidious to mention names. On the motion of Mr. E. M. Gibbs, seconded by Mr. R. W. Fowler, and supported by Messrs. W. C. Fenton and T. Winder, a vote of thanks was accorded to Mr. Leader for his lecture.

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual meeting of the Northern Architectural Association was held on the 11th inst. at 36, Northumberland-street, Newcastle, the President (Mr. Frank Caws, of Sunderland) being in the chair.—Mr. A. B. Plummer, the honorary secretary, read the annual report of the Council. It recorded the increasing success of the Association. Since the last annual report the roll of membership had been brought up to fifty-five members, seventy-five associates, and seventy-three students, a total of 203. The Association recorded with regret the deaths of Mr. Thomas Oliver, seventeen times honorary secretary and four times President, and Mr. W. S. Hicks, also a former President. An account of the year's work was given, as well as comments on the sketches and drawings of students. The library report showed that the number of books issued was 245, the largest on record. The financial statement showed that the year commenced with a balance of 88*l.* 19*s.* 9*d.*, and ended with a balance of 74*l.* 18*s.* 4*d.*, the income being 207*l.* 8*s.* 7*d.* The report of the Students' Sketching Club stated that there had been ten excursions since last meeting, and that the average attendance was seven. The chairman formally moved the adoption of the reports. He said they spoke well for the future of their Association, more especially regarding the work done by the students. There were some who thought they were inclined to make too much of the student element; but he was convinced that the future belonged to the young, and he thought the future would prove that the students of their day had made the best use of their time. The experience of the past year had been distinctly encouraging. The reports were adopted. The election of officers resulted as follows:—President, Mr. J. W. Taylor; Vice-President, Mr. J. T. Cackett; hon. Secretary, Mr. A. B. Plummer; hon. Treasurer, Mr. R. Burns Dick; hon. Librarian, Mr. H. C. Charlewood; Council, Messrs. H. G. Badenoch, J. Bruce, J. W. Donald, J. W. Dyson, M. H. Graham, H. Grieves, T. Reay, C. S. Errington, J. C. Maxwell, R. H. Merton, C. E. Oliver, and R. P. S. Twizell, the last five being Associates. The new President was invested with the chain of office, and returned thanks for his election. He would, he said, endeavour as far as possible to cement the different bodies forming the Association, the young with the old.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A general meeting of this Society took place on the 12th inst., Mr. Butler Wilson, F.R.I.B.A., presiding, when a paper on "The Planning of Recent American Libraries" was read by Mr. Sydney Greenslade. The lecturer alluded to the great impetus given to the library movement through the generosity of Mr. Carnegie. The American architect, with unequalled opportunities, had recently produced some almost perfect plans, though new developments were always taking place. In large libraries the special room, with its special collection, had become a law, also the small room for special study. The "open access," as opposed to the "indicator" system, was being rapidly adopted, and naturally wrought changes in the plan, so that the borrower might have ready means of selection. Librarians nowadays were more certain of their requirements, so that to-day there should exist few obstacles to the provision of suitable library buildings in this country. Numerous views, accompanied by descriptions, were given of recent examples in the States. A discussion followed, in which Mr. T. W. Hand, the city librarian, championed the cause of the "indicator" system as opposed to that of "open access," which resulted in the hasty perusal of the first and last few pages of works of fiction, and their replacement on the shelves. A vote of thanks was accorded the lecturer, on

the motion of Mr. W. H. Thorp, seconded by Mr. Robert P. Oglesby.

EDINBURGH ARCHITECTURAL ASSOCIATION.—A meeting of the Edinburgh Architectural Association was held in the rooms, 117, George-street, on the 11th inst., Mr. A. Hunter Crawford, President, in the chair. Mrs. Ramsay Traquair submitted a paper on the subject "Decoration," illustrated by lime-light views. First, with regard to the attitude of the decorator, she said the architect came first, paving the way and creating the decorative artist. It was the architect who must give the favourable soil and atmosphere in which the decorative worker sprung to life. Decoration should become a sort of natural growth, and was only good in its proper place: taken out of that place, it would be a beautiful fragment, but it was only a fragment. She spoke of line as a means towards expression, and pointed out that the Greeks always gave prominence to the angle when they wanted activity, and gave prominence to horizontal and vertical lines when they wanted quietness. The relations between line and colour and the uses of line and colour in decoration were touched upon, and it was pointed out that a flat tint corresponded with a straight line, a graduated tint with a curved line, and broken colour with an angle. She emphasised the importance of the inferior parts of decoration being designed as carefully as the principal bits, and of not being given to inferior hands, otherwise the principal parts were apt to look like pictures in more or less unconnected surroundings.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Lord Monkswell, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Wandsworth Borough Council 3,660*l.* for public baths at High-street, Wandsworth; and St. George's Union Guardians 17,407*l.* for alterations and additions to the Fulham-road workhouse.

Southampton-row Improvement.—On the recommendation of the Improvements Committee, it was agreed that the estimate of 33,350*l.* be approved, and that the Improvements Committee be authorised to incur expenditure for the purpose of the additional widening of Southampton-row to 100 ft. between Theobald's-road and Fisher-street, necessitated by the proposal to construct in the thoroughfare an open approach to the tramway subway.

Greenwich Tunnel.—Colonel Rotton moved that the recommendation of the Bridges Committee to approve of the supplemental estimate of 24,500*l.* for the purchase of property and payment of compensation in connexion with the construction of Greenwich Tunnel be referred back. He pointed out that the cost of the tunnel had gone up from 70,500*l.* to 155,000*l.*

Mr. Beachcroft seconded the amendment.

Mr. Sears (Chairman of the Committee) pointed out that although the original estimate was 70,000*l.* before the work was started, a revised estimate of 155,000*l.* was brought forward and approved by the Council.

The amendment was negatived, and the recommendation agreed to.

Grange Hill Forest.—The Parks Committee reported having considered a letter from Mr. E. North Buxton, suggesting the acquisition by the Council and subsidiary to the main Hainault Forest scheme of about 78 acres of land known as Grange Hill Forest, adjoining Claybury Asylum, and asking the Council to contribute half the cost (about 4,500*l.*) subject to the remainder of the purchase-money being raised locally. The owner, however, sought to impose the condition that patients at Claybury Asylum should not be exercised on the land if acquired by the Council. The Committee recommended that in view of the condition sought to be imposed the Council take no action.

Mr. Beachcroft considered they had spent too much money on Hainault Forest, and he moved that the words as to the condition be left out of the recommendation, or otherwise it simply gave the owner a chance to come again to the Council with a fresh offer.

Mr. Sidney Low seconded the amendment.

Mr. S. Webb regretted that the Council did not buy the land, for the time would come when it would be needed.

The amendment was defeated, and the recommendation was agreed to.

District Surveyors.—The Building Act Committee reported as follows:—

"On January 27, 1903, we reported that we purposed submitting to the Council as soon as possible recommendations in regard to the appointment of District Surveyors for the districts of North-West Kensington, South Kensington, and Sydenham. We have since gone very carefully into the question, and are now prepared to submit recommendations on the subject. We have borne in mind the principle that has been laid down by the Council that, as opportunities offer, districts should be rearranged so as to make their boundaries as far as possible co-terminous with those of the Metropolitan Boroughs, and at the same time make them sufficiently valuable to attract suitable candidates. As regards the districts of North-West Kensington and South Kensington we are of opinion, after fully considering all the circumstances, that the most satisfactory arrangement would be to unite these districts, and to transfer certain small portions to other districts, so as to make the boundaries of the new district of Kensington co-terminous with those of the Royal Borough of Kensington. The gross value of the district so formed is estimated to be about 1,000*l.* per annum. With regard to the district of Sydenham we think this a large and valuable district which might, with advantage, be divided into two districts. The gross average value of the whole district for the three years ending December, 1901, was 1,572*l.*, the gross value in 1902 being 1,850*l.* 8s. 7d. If the district were divided into two districts, the line of division adopted being the Nunhead and Shortlands Railway to Stumps-hill and thence by a line along the centre of Stumps-hill to the county boundary, the gross values of the districts so formed would be approximately 1,000*l.* and 600*l.* If the Council decide to adopt this course we purpose issuing advertisements inviting applications for the posts of District Surveyors for both these districts. The Council will remember that the older District Surveyors are not subject to the conditions which it attaches to the appointment of District Surveyors, which conditions provide *inter alia* that a District Surveyor shall not carry on any private practice. One of the points to which we have had regard is the advisability of transferring one of the older District Surveyors to a more important district than his present one, making it a condition of his transfer that he should subscribe to the standing conditions of the Council relating to the appointment of District Surveyors. We accordingly inquired of eight of the older District Surveyors whether they would be prepared to accept a transfer upon this condition to the more valuable of the new districts, which it is suggested should be constituted by the division of the present district of Sydenham, but none of these gentlemen were willing to accept the transfer upon these terms. We were, however, informed by Mr. S. F. Clarkson, District Surveyor for North Chelsea, that he would be prepared to resign his present district and accept the proposed new district of Kensington, subject to the standing conditions of the Council, provided the age at which he would be compelled to retire (condition *f*) were made 70 instead of 65. Mr. Clarkson is 63½ years of age, but he is physically active and, in our opinion, quite capable of personally discharging the duties in the proposed new district. The Council has in a similar case waived altogether the condition which provides that a district surveyor shall, if required to do so, retire on attaining the age of sixty-five, and we think that in the circumstances of the present case it would be well to modify the condition as desired. If the Council adopts the recommendation which we shall submit in regard to the formation of the new district of Kensington, and the transfer of Mr. Clarkson thereto, we think that Mr. Clarkson's present district of North Chelsea should be added to the district of South Fulham, which is held by Mr. S. F. Monier-Williams. The latter, who was appointed to South Fulham in 1898, has applied to be transferred to a more valuable district, as he states that the value of the South Fulham district is diminishing, and that in two years' time it will probably not be worth more than about 200*l.* a year. We recommend—

(*a*) That a new district of Kensington, with its boundaries co-terminous with those of the Royal Borough of Kensington, be formed by uniting the districts of North-West Kensington and South Kensington, and transferring certain portions of these districts to other districts.

(*b*) That, subject to the Council adopting recommendation (*a*), and in order to give effect to it, the Queen's Park Ward of the Borough of Paddington and the late detached portion of St. George, Hanover-square, on the north side of Bayswater-road, be added during the Council's pleasure to the district of Paddington, but that Mr. Meeson, the District Surveyor for Paddington, be required to pay to the District Surveyors who began the supervision of the works transferred to him a proportionate amount of the fees chargeable on such works, calculated on the extent to which they have been supervised by them, and that the portions of the parishes of St. Margaret and St. John the Evangelist, Westminster, north and south of Kensington Gore, and Knightsbridge, at present in the districts of North-west and South Kensington respectively, be added to the district of St. George, Hanover-square, North.

(*c*) That Mr. S. F. Clarkson be appointed District Surveyor for the new district of Kensington as from March 31, 1903, subject to the Council's standing conditions as to the appointment of District Surveyors, with the exception that 70 shall be substituted for 65 in condition (*f*) as the age at which he will be required to retire.

(*d*) That, subject to the Council adopting recommendation (*c*), the appointment of Mr. F. S. Clarkson as District Surveyor for North Chelsea be terminated as from March 31, 1903, and that this district be added to the district of South Fulham, and that the district so formed be designated North Chelsea and South Fulham.

(*e*) That the district of Sydenham be divided into two districts, and that the line of division be the Nunhead and Shortlands Railway to Stumps Hill, and thence by a line along the centre of Stumps Hill to the county boundary, and that the western district be designated Sydenham, and the eastern district Catford.

We have to report that Mr. G. Legg has resigned his appointment as District Surveyor for the district of West Hackney. We have made temporary arrangements for the supervision of the district, and will report later as to filling the vacancy. We recommend—That the resignation of Mr. G. Legg, District Surveyor for the district of West Hackney, be accepted as from March 10, 1903."

All the recommendations were agreed to, except (*c*), which was taken back.

Housing, Bermondsey.—The Housing of the Working Classes Committee recommended, and it was agreed, that, subject to the area of all rooms being not less than the Council's minima of 144 square feet for living-rooms and 96 square feet for bedrooms, to compliance with the by-laws as to the provision of suitable ash-pits, and to any consents necessary under the London Building Acts being subsequently obtained, the plans submitted by the Metropolitan Borough Council of Bermondsey of the dwellings proposed to be erected under the London (Fulford-street and Braddon-street, Rotherhithe) Improvement Scheme, 1897, be approved.

Holborn to Strand Improvement.—The Improvements Committee recommended, and it was agreed, that the working drawings, specification, and estimate of the cost (35,650*l.*) of the paving and other works in connexion with the formation of the western portion of Aldwych between Catherine-street and Drury-lane, and also of the portion of the tramway subway under the road, be approved, and be referred to the Works Committee, with a view to the work being carried out without the intervention of a contractor.

Workmen's Trains.—On the motion of Dr. Fletcher Little, seconded by Dr. Cooper, it was agreed:—

"That it be referred to the Housing of the Working Classes Committee to consider whether, in view of the greatly overcrowded state of large portions of the west, north-west, and north of London, chiefly caused by the inadequate number of workmen's trains provided by the Great Central, Midland, Great Northern, London and North-Western, and Great Western Railway Companies, the Council should be recommended to memorialise the Board of Trade to take the necessary steps for increasing the number of such trains forthwith."

Electrical System on the Tramways.—A long discussion took place on a motion moved by Mr. Beachcroft to the effect that the Highways Committee should report as to the cost of the construction per mile of the overhead and conduit systems of electric traction; as to the objections, if any, against a mixed system; and as to there being any solid reason why the Council should not adopt the overhead system inside the county in outside districts.

Mr. Benn offered to accept the motion, on the understanding that the Report should be brought up when the Council itself had had experience of the electrical working of its conduit system, but the mover would not agree to this.

On a division the motion was rejected by 39 votes to 16.

Building in Squares.—Mr. Beachcroft, in accordance with notice, moved that it be an instruction to the Parks Committee, in view of the recent decision come to on their recommendation to acquire, at full building value, two small squares in the borough of Stepney, to consider and report whether any measures are practicable in order to restrain owners from converting to building purposes small open spaces in the county of London

which have been dedicated for use as "squares" and used as such for a long period of years.

Mr. Dodson seconded the motion, which was carried *nem. con.*

The Council adjourned at seven o'clock.

THE INSTITUTE OF BUILDERS.

THE nineteenth annual general meeting of the Institute of Builders was held at the registered offices of the Institute, 31 and 32, Bedford-street, Strand, W.C., on the 18th inst.

The minutes having been read and confirmed, the report of the Council and the audited accounts and balance-sheets were read and adopted. The Report stated that during the past year the Council had carefully considered the various Parliamentary Bills affecting the building trade, and had taken action with satisfactory results in several cases. Questions relating to labour disputes, not being within the range of the Institute's functions, had been disregarded. The Council regretted that, notwithstanding the need for Government restriction as to the extent to which municipal trading shall be carried, the Joint Select Committee of both Houses of Parliament of 1900 had not been re-appointed, and that the request of employers to appoint a Royal Commission to define the extent to which municipal trading should be sanctioned by Parliament had been ignored. Complaints having been made by members that the practice of demanding priced bills of quantities with tenders was extending, the Council co-operated with the London Master Builders' Association and sent the following letter to all the metropolitan representative and public bodies and to many public and private architects in the provinces. This communication had had a good effect, and as an instance of this the London County Council had decided that in future the bills of quantities of the successful competitor only shall be retained :—

"DEAR SIR,—Our attention has been called to the growing tendency to require priced bills of quantities to be sent in with builders' tenders. We think that architects and public bodies who have adopted this course do not fully appreciate the trouble and annoyance which it gives to the builders.

There is a great objection on the part of builders to having their prices, in detail, communicated to any one except to the architects and surveyors, with whom the work is being carried out. Such prices are regarded as private information acquired by business experience and capital expenditure.

The practice has always been to require the successful competitor only to deposit copies of his priced bills of quantities. These copies of the bills should then remain in the custody of the architect or surveyor until they are required for the purpose of settling accounts.

We venture to hope that you will use your influence to continue this practice, which has always worked satisfactorily in the past.—We are, dear sir, Yours faithfully, WILLIAM F. KING, President, Institute of Builders; GEO. JAS. LOUGH, President, London Master Builders' Association."

The Council continued to keep in view the importance of an agreement with the Royal Institute of British Architects on the terms of a common form of conditions of contract. Though not in a position to make an official statement on this question the Council had the pleasure to report that the relations between the officers and Councils of the two Institutes are of the most cordial nature, and it should not be difficut for them to come to an amicable arrangement which would confer a benefit on all connected with the trade, both in London and in the provinces.—A committee had been appointed to consider the advisability of instituting an educational section. A great deal of useful information had been already collected, and members were requested to favour the Council with suggestions. The Council prepared a petition to Parliament against the London County Council Building Acts (Amendment) Bill. The Bill had been withdrawn, but it is probable another Bill, which would be carefully watched, will be presented to Parliament next Session.

The following elections were made :—As President, Mr. W. F. King; Vice-President, Mr. F. L. Dove; Treasurer, Colonel Stanley G. Bird, C.B.; and Hon. Auditor, Mr. E. J. Hill. The Executive Committee were elected as follows:—Messrs. Geo. Kett, J.P. (Cambridge), W. Nicholson (Leeds), A. F. Randall (London), W. Sapcote (Birmingham), B. Hannen, jun. (London).

The meeting then terminated.

COMPETITIONS.

DWELLINGS, LIMERICK.—The first premiated design in this competition was by Mr. John H. Ryan, 1, Metal Exchange-buildings, Whittington-avenue, London, E.C.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

Lines of Frontage and Projections.

Hampstead. — The retention of a glass-roofed covered way at the side of No. 26, The Parade, Cricklewood, to abut upon Skardu-road (Mr. J. D. Hunter for Mr. F. W. Rodwell).—Consent.

Woolwich.—One-story shops upon part of the forecourts of Nos. 57, 59, 61, and 63, High-street, Plumstead (Mr. H. Busbridge for Messrs. C. Carthew and S. T. Blackler).—Consent.

Greenwich.—Two houses with bay windows on the west side of St. John's Park-road, Blackheath, southward of the Royal Standard inn (Mr. A. Levett).—Consent.

Hackney, Central.—Buildings upon the site of Nos. 171, 173, and 175, Lower Clapton-road, Hackney (Mr. J. Hamilton for Mr. F. Sharman) —Consent.

Hammersmith.—An iron and glass shelter at the Shepherd's Bush Empire Palace Theatre, Shepherd's Bush Green, Hammersmith (Mr. F. Matcham).—Consent.

Hampstead.—Bay windows to a block of residential flats on the northern side of Finchley-road, Hampstead, at the corner of Heath-drive (Mr. J. F. Bell).—Consent.

Lewisham.—A porch to a house on the east side of Bromley-road, Catford, on the next plot but one to the northward of the Catford Cricket Club ground entrance (Messrs. Kennard Bros. for Mr. E. H. Straw).—Consent.

Lewisham.—The retention of a water-closet at the rear of No. 4, Halesworth-road, Lewisham, abutting upon Shell-road (Messrs. Hodson & Whitehead for Messrs. Hodson Bros.).—Consent.

Lewisham.—Six houses, with bay windows, on the east side of Nightingale-grove, Hither-green, Lewisham, between Maybank-road and Brightside-road (Messrs. Norfolk and Prior for Mr. J. Laird).—Consent.

Marylebone, East.—Extension of the period within which the erection of buildings on the western side of Albert-road, Regent's Park, at the corner of High-street on the site of Portland-terrace, St. Marylebone, was required to be completed (Mr. F. M. Elgood for Mr. J. A. Michell).—Consent.

Marylebone, East.—The retention of a projecting sign at the first floor level of No. 64, Berners-street, St. Marylebone (Mr. C. H. Mead for Messrs. P. Heffer & Co.).—Consent.

Paddington, South. — Buildings, with one-story shops in front, on the east side of Westbourne-grove-terrace, Paddington, southward of No. 21 (Mr. J. W. Chapman for Mr. W. Owen).—Consent.

Peckham.—A one-story addition at the rear of No. 62, Queen's-road, Peckham, to abut upon Burchell-road (Mr. E. J. Stevens, for Mr. W. J. Wade).—Consent.

Peckham.—An addition in front of the Baptist Chapel, Rye-lane, Peckham (Mr. H. P. B. Downing, for the Trustees of the Chapel).—Consent.

Rotherhithe.—A porch in front of No. 39, New Church-street, Bermondsey (Mr. E. Crosse, 1or the Rev. E. N. Coulthard).—Consent.

Strand.—A granite hood at the entrance to Thanet House, Nos. 231 and 232, Strand, Westminster (Messrs. N. S. Joseph, Son, & Smithem for Mr. G. J. Woodman).—Consent.

Brixton.—A three-story building, with a one-story shop in front, at No. 275, Clapham-road, Lambeth (Mr. A. E. Symes for Messrs. J. Commin & Co.).—Refused.

Fulham.—Deviation from the plan approved for the erection of buildings on the north-west side of Conan-street and south-west side of Edith-villas, Fulham, so far as relates to the erection of porches to such buildings and to the position of the building on the north-west side of Conan-street (Mr. W. Cave).—Refused.

Fulham.—One-story shops upon part of the forecourts of Nos. 168 and 170, New King's-road, Fulham (Mr. H. Curnick),—Refused.

Kensington, North.—One-story shops in front of Nos. 114 and 116, Westbourne-grove, and the erection of three houses with shops on the west side of Richmond-road, Kensington (Mr. G. A. Sexton for Mr. A. Woollard).—Refused.

Lewisham.†—Five houses with one-story shops in front on the east side of Torridon-road, Lewisham (Messrs. A. C. and R. A. Blake).—Refused.

Lewisham.—Five houses with shops, and with stables and bakehouse in the rear, on the east side of Torridon-road, Lewisham (Mr. A. C. Baker for Mr. F. Richards).—Refused.

Paddington, South †—Projecting oriel windows to a block of residential flats on a site on the north side of Moscow-road, Paddington, to abut also upon Salem-road (Messrs. Metcalf & Greig for Mr. R. Cooper).—Refused.

St. George, Hanover-square.—A projecting window on the balcony in front of No. 82, Park-street, St. George, Hanover-square (Messrs. W. J. Mitchell & Son for Dr. Day).—Refused.

Wandsworth.—Permission to complete a house commenced to be erected on the north-west side of Mitcham-lane, Streatham, to abut upon Moyser-street (Mr. H. Watt).—Refused.

Lewisham.†—A greenhouse on the south-west side of London-road, Lewisham, westward of the shops known as Imperial Buildings (Mr. J. R. Vining for Messrs. Furness Brothers).—Refused.

Width of Way.

City.—Retention of a two-story addition to No. 78, Upper Thames-street, City, abutting upon Brickhill-lane (Messrs. Woodcock, Ryland, & Parker for Messrs. J. R. & J. Fletcher).—Consent.

Kensington, South.—Retention of two studios at the rear of Nos. 17 and 18, Pembroke-square, Kensington, with the forecourt boundary at less than the prescribed distance from the centre of the roadway of Pembroke-mews (Messrs. T. W. Heath & Sons for Mr. R. J. Barrett).—Consent.

Strand.—A porch and water-closet at the western end of St. Thomas's Church, King-street, to abut upon Chapel-court, Regent-street (Mr. W. J. Parker for the Rev. P. T. Bainbrigge).—Consent.

Hackney, Central.—A two-story workshop at the rear of Nos. 195 and 197, Dalston-lane, Hackney (Mr. E. Caston).—Refused.

Hackney, Central.—A warehouse on the site of Nos. 74 and 76, De Beauvoir-crescent, Kingsland (Mr. G. H. Lovegrove for Messrs. J. King & Co.).—Refused.

Lewisham.†—Two cottages on the northern side of Willow-walk, Rushey-green, Catford, eastward of Willow-walk mission-hall (Messrs. Coad & Pamflett for Mr. G. Cowen).—Refused.

Space at Rear.

Paddington, South—A modification of the provisions of Section 41 of the Act with regard to open spaces about buildings, so far as relates to the proposed erection of an addition at the rear of No. 4, Hyde Park-terrace, Bayswater-road, Paddington (Mr. L. Sharp for Mr. H. Lowenfeld).—Consent.

Whitechapel.—A modification of the provisions of Section 41 of the Act with regard to open spaces about buildings, so far as relates to the proposed erection of a building at No. 184, Old Montague-street, Whitechapel, with an irregular open space at the rear (Mr. H. O. Ellis for the Governors of the Whitechapel Charity).—Consent.

Width of Way, Space at Rear, and Projections.

City.—A building on the site of Nos. 4 and 5, Wine Office-court, Fleet-street, City, to abut also upon Hind-court (Mr. J. M. Knight for Messrs. Slater & Palmer).—Consent.

Width of Way and Construction.

Finsbury, East.—A playshed at the school on the south side of Baltic-street, St. Luke's (Mr. T. J. Bailey for the School Board for London).—Consent.

Formation of Streets.

Greenwich.—That an order be issued to Messrs. D. Smith, Son, & Oakley, sanctioning the formation or laying-out of a new street, for carriage traffic, in continuation of Kidbrooke-grove, Blackheath (for the Earl of St. Germans).—Consent.

Lewisham.†—That an order be issued to Mr. N. McDougall, sanctioning the formation or laying out of two new streets for carriage traffic in continuation of Sandrock-road and Overcliff-road, Lewisham, respectively, and of a street for foot traffic only to connect such two new streets.—Consent.

Lewisham.—That an order be issued to Mr. J. Murray refusing to sanction the formation or laying out of a new street to lead from Fordyce-road to Mount Pleasant-road, Lewisham (for Mr. D. G. Horlock).—Refused.

Working-class Dwellings.

Rotherhithe.—Two blocks of intended dwelling-houses to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a site between Fulford-street and Seven Step-alley, Rotherhithe-street, Rotherhithe (Messrs. Brocklesby, Marchment, & East for the Bermondsey Borough Council).—Consent.

*** *The recommendations marked † are contrary to the views of the Local Authorities.*

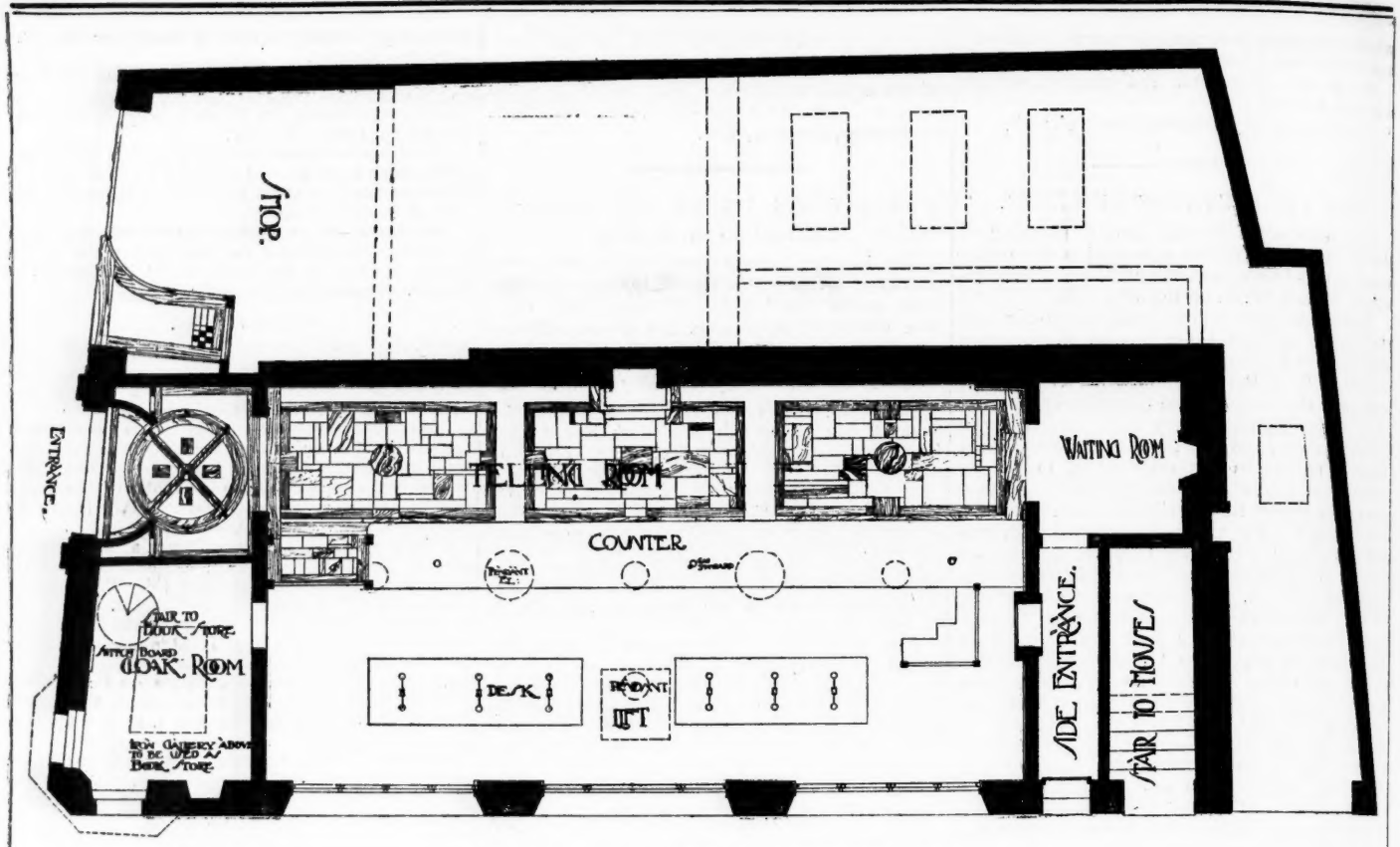
BOOKS RECEIVED.

THE ROOD-SCREEN OF RANWORTH CHURCH. By Edward F. Strange. (Lumley & Co.)

SHIPPING MARKS ON TIMBER. 1903 Edition. (William Rider & Son. 6d.)

THE MODERN CARPENTER, JOINER, AND CABINET-MAKER. Edited by G. Lister Sutcliffe. Divisional Volume IV. (The Gresham Publishing Co.)

STATICS AND ALGEBRAICAL AND GRAPHIC METHODS. By Lewis J. Johnson, C.E. (Chapman & Hall.)



Anderston Branch Savings Bank Buildings. Plan.

Illustrations.

GLASGOW SAVINGS BANK; ANDERSTON CROSS BRANCH.

THE building is of red sandstone, finely tooled, roofed with Highland slates.

The bank occupies the greater part of the ground floor, with strong-room, heating chamber, and lavatories in the basement floor. A hydraulic lift raises the books to the floor of the office for daily use, and lowers them again into the strong-room at night. A large double shop and saloon take up what is left of the ground floor. There are nine dwelling-houses in the upper floors.

The walls of the entrance porch to the bank are finished in mosaic with blue Venetian glass. The mantelpiece of the telling-room is of *brèche claire* marble, and the floor of telling-room is laid in Pavonazza marble. The screens, counters, &c., are of polished mahogany, and the lower walls are panelled in mahogany.

The entrance door is a Van Kannel door.

The total cost of the building was about 12,000*l*.

JAS. SALMON & SON.

OLD BUILDINGS ON THE HIGH BRIDGE, LINCOLN.

THE old thirteenth-century bridge which spans the river Witham at the point where the High-street crosses, is popularly supposed to be the only bridge in the country upon which inhabited houses are now standing.

Prior to their recent restoration, nearly all traces of the old half-timbered buildings had disappeared behind mean brickwork on the street side, and behind plaster and tarred board at the back; and in 1901 the structure had become so ruinous that the Corporation (to whom the property belongs) instructed us to report as to whether it were possible to make it safe and habitable, or whether it would not be better to remove it.

After a careful examination, we reported to the effect that, though exceedingly ruinous, the buildings were capable of being put into a state of repair, and work was commenced by entirely stripping them and exposing the skeleton timber construction.

When this had been done, the condition of the structure was shown to be worse than had been anticipated. In the front the whole of the timber framing had been cut away except the main story-posts and the horizontal sills, and even these had been cut down and their mouldings defaced; the centre portion of the building had sunk 2 ft. 6 in. out of level, and had all but gone through into the river below, chiefly owing to the fact that a large modern chimney-stack, weighing several tons, had been built upon the top of a 3 in. oak partition; further, the stone rib spanning the river and carrying the back of the building, was sinking at the crown and giving way.

The next step was to raise the sunken portion, and this was done by carefully tying the timber framing together, and by placing screw-jacks beneath the story-posts; the excellent condition of the old joints—being hinged, as it were, upon their pins—enabled the screwing up to be done without mishap. A rigid horizontal line was not insisted upon. The defective stone rib across the river was next carefully taken down and rebuilt with the old stones, the building above being carried on temporary timber trusses thrown across the river. All the missing timbers were then replaced, their position being ascertained by the mortice holes in the old sills, and the filling in was done in the original manner, viz., by oak lathing sprung into a groove in the centre of the framing, and plastered both sides.

The original building had no staircases, but the floors were trimmed for step ladders; and seeing that there were also no fireplaces, and that the back windows were not glazed, it is safe to assume that they were not intended for dwelling-houses, but probably for warehouses in connexion with the extensive traffic which was then carried on with the port of Boston at the mouth of the river.

The illustration shows the back of the buildings with the bridge beyond and beneath. The original half-timbered building shows on the upper story, the rough-cast portion below being an annexe containing the staircases, and replacing a dilapidated boarded and tarred shed which had served the same purpose prior to this restoration.

The buildings are now heated by gas, there being, as before mentioned, no fireplaces; and electric light has been installed throughout.

W. WATKINS & SON.

*** We may add to the architects' account of the old buildings and the means taken to preserve them from ruin, that there was at the Burlington Loan Exhibition, in a corner of Gallery II., a very fine little picture by De Wint of these High Bridge buildings as they existed in his day. The exhibition unfortunately has just closed, otherwise some of our readers might have found it of interest to compare De Wint's picture with our illustration, from a photograph, of the buildings as they now appear, after what appears to have been as conservative a restoration as was possible under the circumstances.—ED.

PULPIT OF ST. JOHN THE BAPTIST, HOLLAND-ROAD, W.

THIS pulpit was dedicated on Christmas Day. The materials employed are Corsham stone, with Beer stone for the figures. These figures are St. John the Baptist and the four Doctors of the Church. The marble inlay used in the panels is Greek rosso antico; for the small columns vert antique was used. The capping of the pulpit and the columns which support the figures is *brèche sanguine*. Temporary stone columns, which show on the photograph, were put in, as the marble columns could not be finished in time for the dedication. Messrs. Martyn & Co., of Cheltenham, carried out the work from the designs of Messrs. James Brooks, Son, & Godsell, London and Hereford.

SOME EXHIBITS AT THE "ARTS AND CRAFTS."

WE give this week some further illustrations of works exhibited at the Arts and Crafts Exhibition.

No. 1 is a chimney-piece of marble, made by Messrs. Farmer & Brindley, from designs by Professor Lethaby.

No. 2. An Italian walnut cabinet, inlaid with ivory, made by Mr. W. Sparrow and Mr. E. J. Minihane; designed by Mr. Charles Spooner.

No. 3. On an oak sideboard, by Mr. S. H. Barnsley, is a box inlaid with pearl, also by him.

No. 4 is a mantel register made by the Falkirk Iron Co. The modelling is by Mr. H. Wilson, from designs by Mr. Leonard Stokes and Mr. H. Wilson.

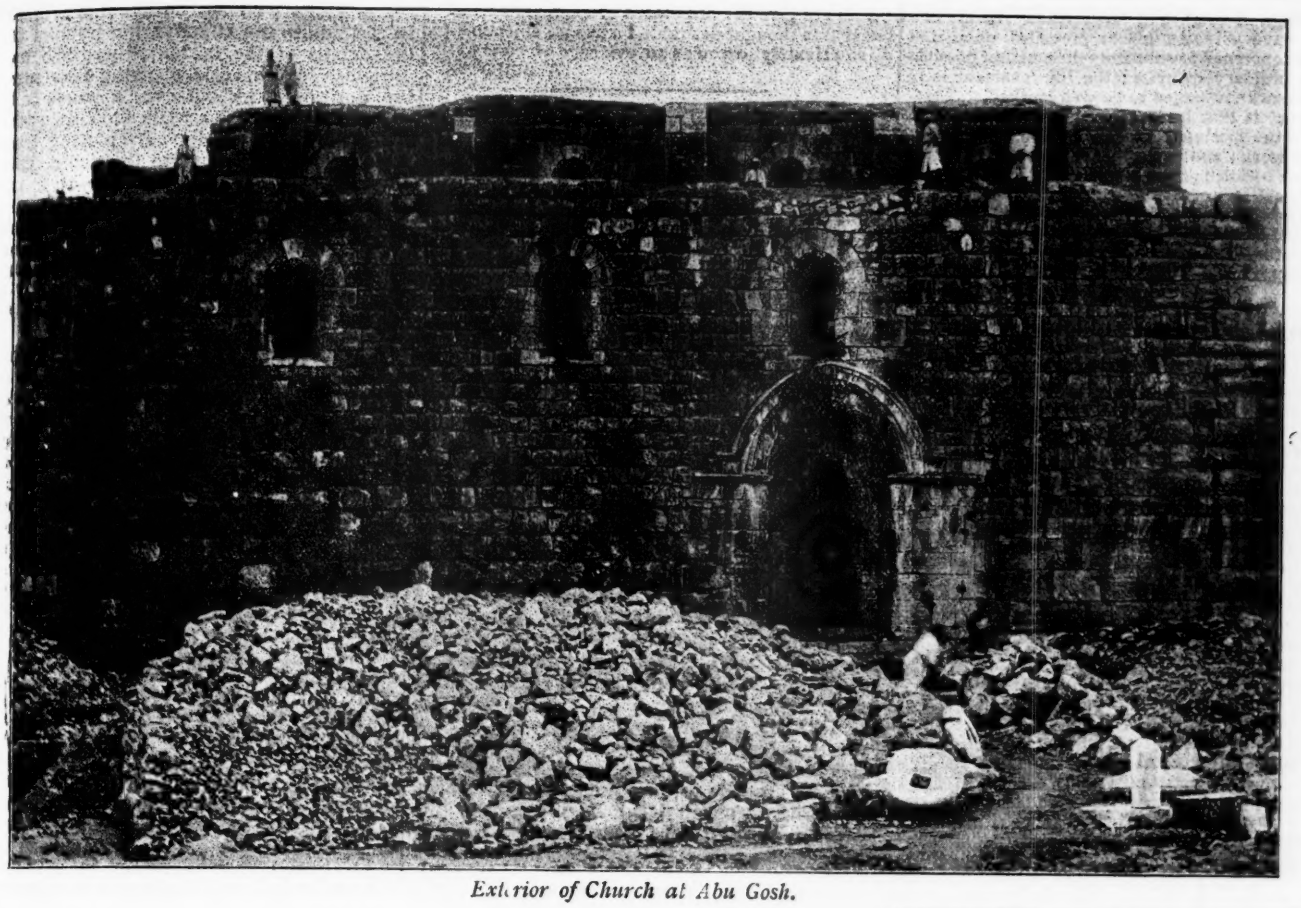
No. 5 is a brass lamp for electric light, made for Messrs. Elsley & Co., by Messrs. W. Kuhlman, J. Summerland, and T. Webb, from designs by Mr. Walter Cave.

Messrs. Farmer & Brindley's admirable marble work is shown to great advantage in the chimney-piece here illustrated. No one knows better than Professor Lethaby how to base a design upon the proper use of materials. We need hardly point out how dependent the design is upon the colour of the marbles used.

The walnut cabinet by Mr. Spooner is a good piece of work. We think it would have been quite as successful if he had spared the cornice with its compound curve.

The box on Mr. S. H. Barnsley's cabinet shows the charming decorative value of mother-of-pearl inlaid on a dark background.

The mantel register by the Falkirk Iron Co., has a beautiful modelled panel and



Exterior of Church at Abu Gosh.

Inscribed Stone at Abu Gosh.

inscription by Mr. H. Wilson; in reality it is somewhat overpowered by the shelf, and would, in our opinion, be better without it. Practically, the grate gives a great deal of heat for its size.

The brass lamp designed by Mr. Walter Cave, and made by Messrs. Elsley, is a fine piece of brass work, with sufficient flat surfaces to give the value of the material.

The photographs were mostly taken specially for us by Mr. Geo. E. Martin.

A RENAISSANCE CHIMNEY-PIECE.

THIS is a design for a chimney-piece in Renaissance style, by Mr. J. J. Shaw.

The upper portion is intended to be executed in plaster in low relief and wax tinted; the lower part in marble and bronze.

THE SANITARY INSTITUTE.—The Duke of Cambridge, President of the Sanitary Institute, will preside at the annual dinner of the Institute to be held on Friday, May 15, at the Hotel Cecil.

PUBLIC IMPROVEMENTS, BLACKPOOL.—Mr. R. H. Bicknell, C.E., held an inquiry recently on behalf of the Local Government Board regarding an application by the Corporation to borrow 10,666*l.* for private street improvement works. The inspector afterwards inspected the streets.

Correspondence.

THE CHURCH AT ABU GOSH—IMPORTANT DISCOVERY.

SIR,—The writer of the extremely interesting article in your issue of March 7 does not seem to be aware of a most important discovery recently made in connexion with the Church of St. Jeremiah at Abu Gosh.

That wonderful Crusaders' church, with its fortified keep, was in reality built on the massive foundations of a Roman military station belonging to the tenth legion, one of those mentioned by Josephus as serving in Palestine under Vespasian. The enclosed photo of an inscription on one of the massive foundation-stones makes this perfectly clear.

Abu Gosh is one of the sites claimed for the ancient Emmaus. On this point I am not competent to speak; but it is noteworthy that the centurion Arius, with a band of soldiers, are said by Josephus to have been surprised and massacred at Emmaus by the insurgent Judeans, in revenge for which act Emmaus subsequently was burnt by Varius.

I may venture to add that the fears expressed that this interesting building will be spoiled by the proposed restoration are, I trust, groundless. For that restoration the French Government is responsible, and not the Benedictine monks; but the latter will be able to control the work, and it is their earnest desire to do nothing which may in the slightest degree alter any feature of the building, but solely to save it from falling into utter ruin.

The interior of the building is in far better repair than would be imagined from a view of the outside. A. H. O. S. B.

THE GLAZING OF WESTMINSTER CATHEDRAL.

SIR,—Having known the late Mr. Bentley from the time that he was preparing his plan for a metropolitan cathedral on the top of St. Mark's, Venice (*sic*), I may perhaps throw some light upon the character of the glazing used in his great building.

Mr. Bentley was himself a first-rate hand in preparing cartoons for painted glass, but determined that the cathedral should not have any kind of ordinary pictorial glass.

It is well known that when leaded glass is properly designed the absence of painted glass in a building is not felt.

The "cible" glazing adopted at Westminster is a case in point. This was only occasionally used in England, at Chester in a part of the cloister, and, it is believed, in some ancient mansions; but the system, which is most beautiful either alone or in combination with pictorial glass, is met with "from Cologne eastward as far as Rome."

In particular, the church of S. Peter's, Cologne, is a model in point of successful glazing, as also are traces of the same thing in village churches on Lake Como and throughout the Engadine, mostly left in the traceries where they occur.

When in Venice I secured as many ancient specimens as possible, which are late in form, less sea-green than the early ones, and have less definite concentric lines and a small central butt, but are very effective when properly leaded. The leads must be as small as possible if the effect in any kind of glazing is to be lace-like; and in the case of cibles they must be placed breaking joint, not quadrilaterally, as at Westminster.

A coloured border is a good adjunct, as also is a square pictorial subject in the middle of a light; and in every ancient example I have examined in its original leads the six little spandrels round an occasional cible are coloured either ruby or blue, without any particular regularity.

As regards Westminster, the glazing is a failure from the position of the cibles one to another, and from the mixture in the building of other systems of leaded-glass, as I warned Mr. Bentley that it would be; but the fact is, that by the time this not unimportant work was in hand the great artist had fallen into absolute ill-health, and probably did not superintend the actual work of the glaziers.

It is surprising the difference of effect of the

same design in small and large leads. In my district I have in some places prevailed upon the persons concerned to substitute the smallest possible lead in ordinary quarries; the improvement is in each case acknowledged to be well marked.

The fact is that leading up-cibles breaking joint is apt, if the specimens are irregular in size, to be a difficult work; and at St. Mark's, Venice, they have all been re-leaded wrong because it is easier; but the effect is entirely without character.

The best size is 5½ in., and the butt should be inside the building, as it causes more play of light. Swiss cottages often contain specimens which are fast disappearing.

AN AMATEUR.

THE VENTILATION OF SCHOOL BUILDINGS.

SIR,—I should be very much obliged if you would allow me space in your columns to raise the question as to whether "the Plenum system" of ventilation which is at the present time so largely adopted for schools is as satisfactory as those who advocate it make out. Without going into matters of practical detail, which would be impossible within the limits of a letter, there are two points to which I should like to draw special attention.

1. In order that the system of downward propulsion should work it is necessary that the temperature of the incoming air should be above that in the room; as a matter of fact, in this system the air is warmed sufficiently to provide for the heating of the rooms, and is consequently in cold weather hot enough to allow for the cooling effect of the windows, walls, &c. The point to which I wish to draw attention is the serious hygienic disadvantage of breathing this hot air; there is not only the enervating effect caused by working in rooms so heated, which must be within the experience of most people, but, if continued for long, a deleterious and weakening effect upon the mucous membranes and the delicate organs of the throat.

2. In this system the inlet is arranged over the outlet on the same wall, which is, of course, the best position where the temperature of the admitted air is above that in the room, but what will happen in summer, when the incoming air will be colder than that in the room? Surely it will flow straight down from the inlet to the outlet, leaving the bulk of the air in the room unaffected. It is quite unusual to find a double set of inlets and outlets to provide for the exactly contrary conditions of summer and winter ventilation.

It is, of course, necessary where there are large numbers in one room to have some means of mechanically forcing fresh air into the building, and this must, of course, be sufficiently warmed to prevent any feeling of cold draught. I would urge that for the sake of the health of the children the temperature of the incoming air should be limited to, say, 55 deg. at the most, supplemented by some form of direct heating.

Splendid results are claimed for this downward system, and often proved by experiments in models, etc.; but under the actual conditions of school work it is very apt to break down, and I think a conversation with a teacher in whose classroom the system is at work would generally surprise those who so warmly advocate its use. Air heated enough to warm a room in cold weather is unpleasant and hurtful, even though it can be shown by analysis not to have more than the prescribed amount of carbon dioxide. Although carbonic acid gas is heavier than pure air, yet air which has been breathed is, owing to the amount of moisture which it takes up, lighter than ordinary air, and so is found in the upper part of the room even when it has become cooled down. It is surely better to use the pressure of the incoming air to accelerate this upward movement, than to have to counteract it, and force the breathed air down past the heads of those in the room, for nothing short of an intolerable draught will prevent its rising some distance.

FELIX CLAY.

A QUESTION OF QUANTITIES.

SIR,—Will you permit a discussion upon the following subject?

I priced a bill of quantities in which there were the usual provisional amounts for works to be done by special trades, such as electric lighting, heating, &c. To these amounts I added a moderate sum as profit, the largest addition being 10 per cent. Some of these items have been paid by the architect and not by me.

In settling up the account the surveyor has deducted not only the provisional amounts, but the sums I added as profit and use of my plant, &c.

The items in quantities bearing upon the subject are as follows:—

"Contract to be for a lump sum, and no allowance will be made for errors or contingencies."

"Provisional and P.C. amounts are for full value named without profit, vouchers for net payments to be produced at settlement."

Will any of your readers state what is the correct custom in a case of this kind, as in a long experience I have never known such deductions to be made, neither can I hear from any architect, builder, or surveyor whom I have consulted that it is in order.

I do not give the architect's or surveyor's names, but if it is thought desirable I have no objection to do so privately to you as an evidence of good faith.

A BUILDER.

MEMORIAL WINDOW, CHAPEL ROYAL, SAVOY.

SIR,—Will you kindly permit me to say that Mr. J. E. C. Carr was associated with me in preparing the design and cartoons for this window, and the latter are chiefly his work?

E. J. PREST.

TRADE CATALOGUES.

THE London Fireproof Plate Wall Co. send a leaflet with description and illustrations of their fire-proof plate walling for partitions, which, if we remember right, we have seen and described before when exhibited at one of the building trade exhibitions. These are 2½ in. thick slabs with vertical tubular hollows; the meeting of two slabs, with their fluted edges, forms a similar tube, and the courses are connected by liquid cement poured down the continuous tubes thus formed. Iron rods can also be passed through the tubes so as to suspend the partition from a girder where it is desired to keep the weight of it off the floor. The system has a great deal to recommend it; it is permanent and fire-resisting; said to be sound-proof (this we have not tested); and it saves space in partitions.

Mr. R. D. Stewart sends us his price list of paints, colours, oils, varnishes, &c.; also a list of specialities, including English white lead ground, linseed oils, three kinds of oak varnish, including a cheap hard drying pure gum varnish, to dry in four to eight hours.

A leaflet on the "Bellophone" has been sent us by the General Electric Co. of Queen Victoria-street. The "Bellophone" consists of a telephone receiver and transmitter which can be at once fitted on to any existing system of electric bells, and thus verbal communication between any room and the kitchen can be established by means of the existing wires. The price of a complete set is only 15s., and a screw-driver is all that is necessary in order to attach the fittings to the bell-push in the room and the indicator in the kitchen. They also send us a leaflet of the "Geeko" battery buttons, which can be used for recharging ordinary "Leclanché" batteries when they begin to get run down. It is claimed that it is more economical to use these soluble pellets of compressed sal ammoniac than the usual crystal or powder. Spilling the salt on the top of a porous pot is a frequent cause of "creeping." There would be little likelihood of this happening when the pellets were used.

The James Keith & Blackman Co., Ltd., has sent us an illustrated pamphlet relating to the Keith Light. This is a high-pressure gas lamp, and consists of an incandescent gas burner supplied with gas compressed by a device operated by water. The pressure of the gas as it issues from the injector into the mixing tube of the burner is equivalent to that of about 8 in. of water. The cost of compressing 1,000 cubic ft. of gas is about 1d. With a consumption of 10 cubic ft. of gas per hour the mantle emits a light of 300 c.-p.; so that with gas at 2s. 6d. per 1,000 cubic ft., the cost of the gas required to maintain a light of 1,000 c.-p. for one hour is 1d. The initial cost of the compressing apparatus and burner is not mentioned.

The Simplex Steel Conduit Co., Ltd., of 20, Bucklersbury, London, E.C., have sent us a new annual edition of their price list in the form of a neat pocket book. Their system of wiring is now well known, and has come into extensive use. A clear illustrated description of it is given, and we note that the prices of the conduits are in several cases considerably reduced. We were specially struck with the "Simplex" brass-cased conduit, which has all the appearance and finish of a brass tube combined with the strength and lightness of thin steel. It may also be used as a picture rod, light rack, &c., with perfect safety. An oval tube which is described ought to prove useful for many purposes. All interested in the safe wiring of buildings ought to write to the company for a copy of this book.

The Anaglypta wall-paper manufacturers (Darwen) send us a large and sumptuous catalogue of illustrations of their numerous designs in "Anaglypta" for ceiling and wall decoration. The general style of these designs is very good; many of them have high artistic character as well as considerable originality. In addition to the effective illustrations showing details of the designs, there are outline drawings to ¾-in. scale, showing how many of the designs work out over a whole ceiling; and an architect who wishes to employ any of these drawn-out designs, by placing tracings of the plans of rooms, to the same scale, on these outline drawings, can see at a glance how the design can best be worked into the space and proportion afforded by the room. The volume contains also full directions for fixing the Anaglypta paper. Altogether it is a remarkable example of an illustrated catalogue, and highly creditable to the firm issuing it.

Messrs. Archibald Smith & Stevens, of Queen's-road, Battersea, have sent us a carefully got-up illustrated pamphlet on electric lifts. It contains a great deal of original matter, and deserves careful study by everyone interested in lifts. Tables are given of the comparative cost of working hydraulic and electric lifts, and the results are most instructive. The figures are not calculated theoretically, but are tabulated from the annual meter bills of their customers, and there seems to be no reason to doubt their substantial accuracy. The initial cost of a high-pressure hydraulic lift is about 25 per cent. less than the initial cost of an electric lift, but the subsequent working expenses of the latter are very much smaller. Examples of lifts in London, Manchester, Dublin, and Glasgow are worked out, and in some cases the meter bill for electric power is less than one-fifth that for water power. They also state that it makes little difference what the system of electric supply is, although the direct current is the most economical. The cost of repairs, methods of control, and various automatic systems are discussed in an able and interesting manner.

PROPOSED QUANTITY SURVEYORS' ASSOCIATION.

WE are asked to give publicity to the following circular letter:—

"17, Bedford-row, W.C.,
March, 1903.

SIR,—Arising out of correspondence which has recently taken place in the columns of the *Builder* upon the question of the desirability of a distinctive Association being formed for quantity surveyors, a meeting of London and provincial members of the profession was held on March 6, 1903, at the offices of Mr. F. B. Hollis, 17, Bedford-row, London, W.C., Mr. W. Hoffman Wood (Leeds) in the chair, when it was resolved to seek the co-operation of gentlemen favouring such formation.

The following were the main resolutions passed at the meeting:—

1. That there was a distinct need for an Association solely for quantity surveyors.

2. That such an Association be named 'The Quantity Surveyors' Association.'

3. That in the formation of the Association, the value and importance of the Surveyors' Institution be fully respected and recognised, and that that body shall be courteously approached to assist in the registration of the Association, and that members of the Surveyors' Institution who are practising as quantity surveyors be invited to also join the distinctive Association.

4. That none but qualified quantity surveyors be admitted to membership.

The main objects of the proposed Association being briefly as follows, viz.:—

1. To uphold the dignity and importance of the profession, and to provide the means for quantity surveyors to meet and discuss subjects of interest, and to settle cases of difficulty.

2. As a guarantee of efficiency and fair dealing as between the building owner and the builder.

3. As an additional means of ensuring the confidence of architects.

4. To encourage uniformity of practice.

It was further resolved at the meeting that the founders' first annual subscription should be one guinea, which should cover entrance fees, and that after the registration of the Association, it is suggested that the entrance fee should be five guineas, and the annual subscription two guineas.

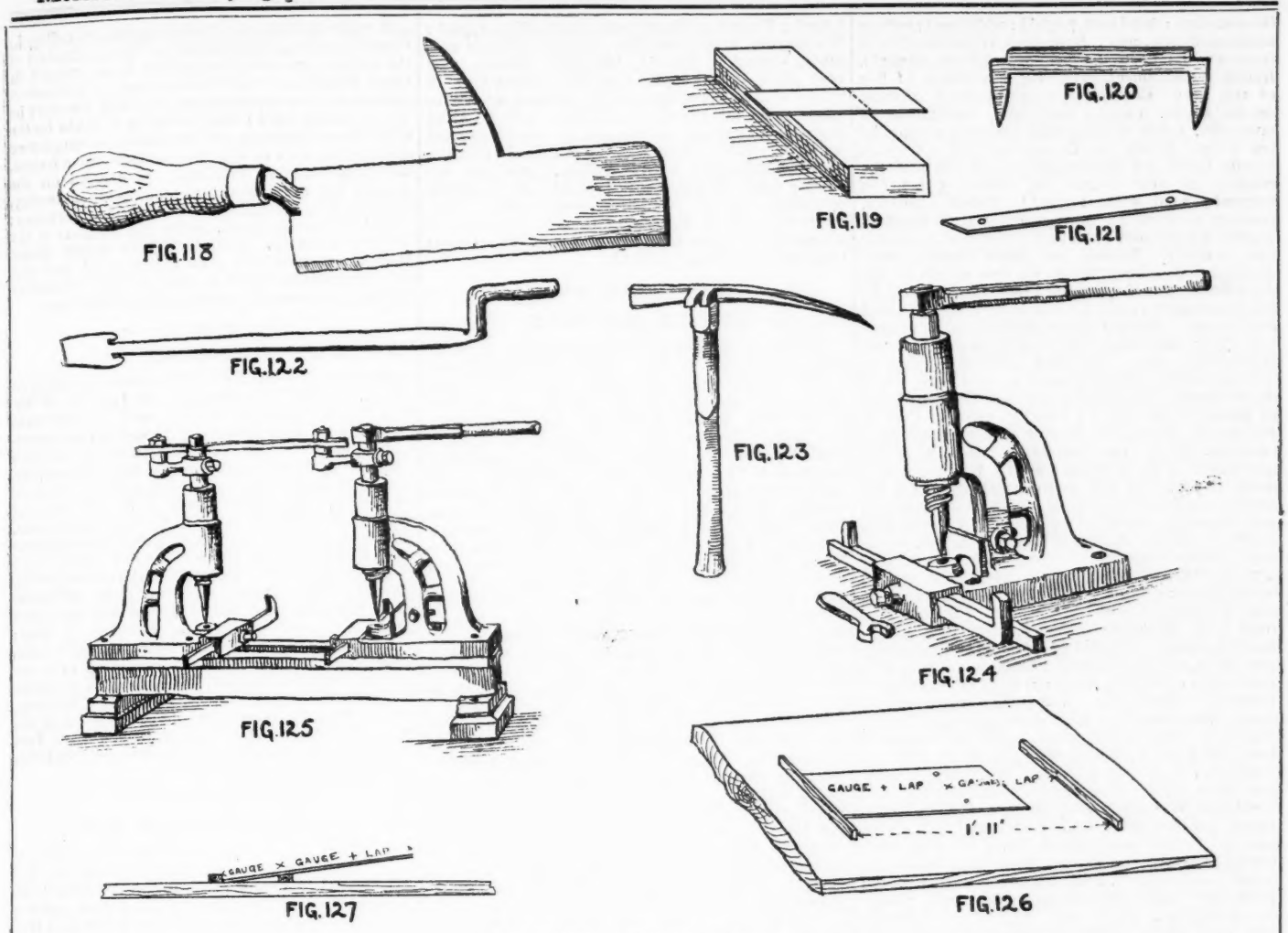
The promise of your influence and support will be greatly esteemed.

A postcard is enclosed, addressed to the (interim) hon. sec. of the Association, and you are courteously requested to express your views thereon, and return it to the above address as soon as convenient.

A general meeting will be called at an early date to elect a president, officers, &c., of which you will be duly notified,—Yours faithfully,

F. B. HOLLIS,
Hon. Sec. and Treasurer.

The above letter has been sent to all London and provincial quantity surveyors in so far as their



Illustrations to Student's Column.

names and addresses can be obtained from directories and from the secretaries of architectura associations.

The hon. sec. will be glad if any quantity surveyor who has been omitted will communicate with him at once."

The Student's Column.

BUILDERS' TOOLS AND THEIR USES.

CHAPTER 7.

Slaters' Tools.

THE following tools are employed by the slater :—

1. Zax.
2. Dog.
3. Ripper.
4. Hammer.
5. Square.
6. Shaving Tool.
7. Holing Machine.
8. Scantle.
9. Chisels.
10. Mallet.
11. Trowel.
12. Rod.

The *Zax*, saix, axe, chopper, or cutter, as it is variously named, is a large steel knife-shaped instrument, with a blade 6 in. or more long, and 2 in. wide, having a bevelled edge, and used for trimming and cutting the slates square. At the back there is a sharp, pick-like projection, 3 in. to 5 in. long, for holing the roofing slates, although for large quantities the holing process is performed by a special machine (fig. 118). The word is evidently derived from the *seaxe*, or short sword, of the Saxons.

The zax is thus brought into operation : A brick is placed on the bench at which the slater works, and a slate is then taken up with the left hand and placed with the portion of it desired to be cut off overlapping the brick (fig. 119). A series of holes is now hacked along the slate (on a line previously scored with a nail) with the tooth of the zax. With the blade of his instrument the slater then chips off the overhanging part of the slate at these holes, neatly trimming off the roughened edge. Instead of utilising a brick, a slate is also trimmed by holding it horizontally over another slate placed vertically, the pressure keeping the lower one in position.

The *Dog*, or cutting iron (fig. 120), is 1 ft. to 2 ft. long, with two sharp feet for driving into the wooden bench, and is employed when reducing the dimensions of slates. These are laid on the dog, and are cut with the zax ; in fact, the cutting iron takes the place of the brick in fig. 119.

An iron straight-edge is sometimes used for the same purpose, and is fixed to the bench by means of screws (fig. 121).

The *Ripper* consists of a thin steel blade, 2 ft. or 3 ft. long, and some 1½ in. broad, enlarged at the point, with a notch on both sides and sometimes at the tip, for drawing nails (fig. 122). It is slipped up under damaged slates to cut the nails when taking off the former to repair the roof.

The *Hammer*, or slater's pick hammer, has a notch or claw at one side of the head for grasping and drawing nails, and a pointed and slightly curved end for holing slates (fig. 123).

The *Square*, of iron, is required for squaring and testing slates.

The *Shaving Tool*, or drawing knife, is similar to that of the carpenter's, and is used for smoothing the face of slates, slate slabs, &c. It has a cast steel blade, about 12 in. long and 2 in. wide, sharpened on one edge, and with a beech handle at each end.

The *Holing Machine* is employed for drilling the holes in the slates, there being two kinds of machine, single and double. The single slate-holing machine is seen in fig. 124. It is made of iron, with a lever handle, and rests on, or is clamped to, the bench when in use. A single machine, with a smart boy, will be able to hole from 300 to 400 slates per hour. A double slate-holing machine is illustrated in fig. 125, which punches two holes in one operation, thus obviating the necessity for reversing the slate. It will be noticed that the gauges and distances can be readily arranged to any length. These appliances are simple, rapid, and effective, and will hole slates as fast as any man or boy can put under them, with the least breakages. The latest type punches *countersunk* holes.

The *Scantle* is a gauge by which slates are regulated to their proper length when trimming and holing them. Fig. 126 represents two bits of lath nailed on the bench at a distance apart (which forms the scantle or gauge) of the slate plus lap—*i.e.*, at a distance of the slate + distance of nail hole from tail of slate—that is, if the slates are centre nailed, remembering the rule, $\frac{\text{Length—Lap}}{2}$ = Gauge, which for a Countess slate would work out $\frac{20 \text{ in.}—3 \text{ in.}}{2} = \frac{17 \text{ in.}}{2} = 8\frac{1}{2}$ in. Gauge. A slate is then placed close up against one lath, and a hole is drilled by the machine. It is then reversed, set against the other lath, and the second hole bored. As soon as one slate is punched it is put aside, and another one brought forward for piercing. A boy and a man are usually employed in the operation, though one person only may be so occupied. It will be observed that the single slate-holing machine already possesses gauging irons to hold the slates at the proper distance when being holed, thus dispensing with the pieces of lath.

Fig. 127 shows another method of attaining the same end, the laths being placed at a distance apart equal to the gauge of the slate. A line is scored across the slate at the distance of the gauge, and the holes there pierced.

Chisels and *Mallet* are used for working slabs of slate, and are similar to those employed by stonemasons.

A *Trowel*, as well as a hod and mortar board, are necessary when torching or bedding the slates in hair mortar.

A *Rod*, or long lath, is essential for making and setting out slating to roofs.

PUBLIC WORKS AND BUILDINGS.

AMONGST the works which the Government propose to carry out in the financial year ending March 31, 1904, subject to the House of Commons voting the necessary supplies, are the following :—*Buckingham Palace*, erection of an official residence in the grounds for the clerk of the works, to cost 1,000*l.* ; formation of pathways in forecourt, 150*l.* *Royal Mews, Pimlico*, erection of coach-house and dormitory, 1,500*l.* *Kensington Palace*, alterations and sanitary improvements, 300*l.* *Pembroke Lodge, Richmond Park*, provision of water supply, pipes, cisterns, &c., 400*l.* *Osborne House, Isle of Wight*, alterations and improvements (including new lifts ; heating, lighting, and water services ; and new furniture), 10,500*l.* *Bushey Park*, enlargement of the Hampton Court entrance to the Park, 500*l.* *Hampton Court Gardens*, reconstruction of plant-houses in new frame-ground, 1,000*l.* (on account ; total cost, 1,700*l.*). *Kensington Gardens*, new plant-house, 200*l.* (to complete ; total cost, 600*l.*). *Kew Gardens*, new pumping-house, mains, &c., 1,425*l.* (to complete ; total cost, 2,525*l.*) ; herbarium, new wing, 1,400*l*

(to complete ; total cost, 7,050*l.*) ; additional sanitary accommodation, 200*l.* *Hyde Park*, reconstruction of frame-ground, 3,000*l.* (on account ; total cost, 12,000*l.*). *Houses of Parliament*, improving ventilation of five of the Peers' Committee rooms, 1,000*l.* ; altering smoke shafts, 1,050*l.* ; improving ventilation of lavatories, lower waiting hall, smoking room, and tea room, House of Commons, 250*l.* *Croydon County Court*, for the acquisition of site and the erection of new courts and offices, 5,500*l.* (on account ; total cost, 11,300*l.*). *British Museum*, erection of store for newspapers, &c., at Hendon, 10,000*l.* (on account ; total estimated cost, including site, 18,000*l.*). *Victoria and Albert Museum, South Kensington*, providing fittings for new rooms in the Art Library, 1,100*l.* *Bethnal Green Museum*, renewing iron pillars, 1,000*l.* (on account ; total estimated cost, 4,000*l.*). *Custom House*, alterations to laboratory, 730*l.* ; improving the ventilation of the Long Room, &c., 550*l.* ; providing additional lavatory accommodation, 150*l.* ; alterations to offices, Royal Albert Docks, 230*l.* ; erection of new Custom House at Barry Dock, 5,600*l.* ; erection of new Custom House and Mercantile Marine offices, Manchester (Salford), 5,040*l.* (on account). *Somerset House*, alterations to the wing vacated by Exchequer and Audit Department, and to the west wing, for the accommodation of various branches of the Revenue, and preparing vaults for reception of records, &c., 8,000*l.* *Post Office Buildings*, Mount Pleasant, extension of boiler-house, 1,050*l.* (to complete ; total cost 3,750*l.*) ; Walthamstow, new sorting office, 2,500*l.* (to complete; total cost 4 000*l.*) ; West Kensington, new sub-district post office, 2,000*l.* (to complete, total cost 18,325*l.*) ; Burnley, new post office, 8,000*l.* (on account; total cost 11,250*l.*) ; Bridgwater post office, extension 4,000*l.* ; Burton-on-Trent, new post office, 8,000*l.* (on account ; total estimated cost 10,600*l.*) ; Darlington post office, enlargement, 6,200*l.* (to complete ; total cost 10,000*l.*) ; Derby, head post office, enlargement, 1,350*l.* (to complete ; total cost 5,350*l.*) ; Esher, new post office, 600*l.* (to complete ; to al cost 3,900*l.*) ; Huntingdon, new post office, 1,900*l.* (to complete ; total cost 2,300*l.*) ; Liverpool, Wavertree district, new sorting office, 1,500*l.* (to complete, total cost 1,800*l.*) ; Norwich head post office, enlargement, 8,950*l.* (to complete ; total cost 13,250*l.*) ; Oxford post office extension, 6,000*l.* (on account ; total estimated cost 7,900*l.*) ; Plymouth head post office enlargement, 7,800*l.* (to complete ; total cost 14,800*l.*) ; Preston, new post office, 3,026*l.* (to complete ; total cost 26,500*l.*) ; Southampton, new head telegraph and branch office, 8,500*l.* (on account ; total estimated cost 20,800*l.*) ; Sunderland, new head post office, 4,304*l.* (to complete ; total cost, 32,354*l.*) ; York, head post office extension, 5,900*l.* (to complete ; total cost, 9,400*l.*) ; General Post Office West, new roof to kitchen of Central Telegraph Office, Bath-street, 1,300*l.* ; Northern district (London) new post office, 57,500*l.* ; Northern district (London) new postal stores, 85,500*l.* ; Blackfriars, new power station, 40,000*l.* ; Chelsea, new post office, 14,200*l.* ; Ealing Dean, new sorting office, 2,450*l.* ; Finchley, Church End, extension of sorting office, 2,800*l.* ; Hanwell, new sorting office, 2,170*l.* ; Holloway, telegraph factory extension, 13,000*l.* ; Kentish Town, new sorting office, 3,420*l.* ; Knightsbridge, new branch office, 5,200*l.* ; Lower Edmonton, new sorting office, 2,425*l.* ; Manor Park, new sorting office, 2,220*l.* ; savings bank, West Kensington, new workshops (moiety of cost) 1,300*l.* ; Southwark, new parcel office, 75,000*l.* ; Stockwell, new sorting office, 4,950*l.* ; Tooting, new sorting office, 3,610*l.* ; Upper Edmonton, new sorting office, 2,400*l.* ; Upper Holloway, new sorting office, 1,660*l.* ; Walham-green, extension of sorting office, 3,000*l.* ; Wimbledon branch post office, enlargement, 1,250*l.* ; Winchmore Hill, new sorting office, 2,050*l.* ; Ashford station, new sorting office, 1,980*l.* ; Barnet, new post office, 5,200*l.* ; Barnsley post office, extension, 4,200*l.* ; Barrow-in-Furness post office, extension, 7,170*l.* ; Barry Docks, new post office, 7,800*l* ; Birmingham post office, alterations, 5,900*l.* ; Bootle, new post office, 5 500*l.* ; Bournemouth post office, extension, 4,900*l.* ; Brentwood post office, alterations, 1,300*l.* ; Burslem, new post office, 4,350*l.* ; Buxton, new post office, 3,500*l.* ; Crewe, new post office, 4,000*l.* ; Croydon (East) sorting office, extension, 2,250*l.* ; Dorchester, new post office, 7,800*l.* ; Durham post office, extension, 2,845*l.* ; Enfield, new post office, 5 000*l.* ; Hanley, new post office, 14,000*l.* ; Hereford, post office enlargement, 2,800*l* ; Hull, new post office, 40,000*l.* ; Ilford, new post office, 5,550*l.* ; Ipswich post office, alterations, 3,100*l.* ; Leeds, Hyde Park-corner, branch post office, 3,500*l* ; Leeds, Hunslet, new sorting office, 1,520*l.* ; Leek, new post office, 4,500*l.* ; Leicester head post office, enlargement, 23,400*l.* ; Lichfield, new post office, 4,300*l.* ; Lincoln, new post office, 10,500*l.* ; Liverpool, new office for Northern District, 9,000*l.* ; Liverpool, four new sorting offices, 6,020*l.* ; Maidstone post office, extension, 5,250*l.* ; Manchester post office, new rooms in roof, 3,000*l.* ; Manchester, Quay-street, engineer's office and store, 27,000*l.* ; Merthyr Tydfil, new post office, 5,650*l.* ; Micheldever post office, alterations, 1,400*l.* ; Middlesbrough post office, enlargement, 4,880*l.* ; Newport (Mon.) head office, enlargement, 24,850*l.* ; Peterborough post office, extension, 11,000*l* ; Portsmouth post office, extension, 14.100*l.* ; Reading post office, alterations, 1,685*l.* ; Richmond (Surrey) post office, enlargement, 2,100*l.* ; Salisbury, new post office, 8,500*l.* ; Thornton Heath, new post office, 1,400*l.* ; Warrington, new post office, 16,200*l.* ; Wigan post office, extension, 5,200*l.* ; Woodford Green, new post office, 3,800*l.* *Colonial Office*, alterations in rooms now in occupation of the Crown Agents, to adapt same for the Colonial Office, 2,000*l.* *Land Registry*, alterations consequent on rearrangement of staff, 1,300*l.* *Albert Docks* (*London*), erection of new Mercantile Marine Offices, 3,200*l.* (on account ; total estimated cost, 8,500*l.*). *Patent Office*, extension, 4,000*l.* (to complete ; total cost, 167,750*l.*). *Royal Mint*, alterations to provide for increased boiler accommodation, 5,000*l.* (on account; total estimated cost, 12,000*l.*)

BRITISH FORESTRY.

THE importance of questions bearing on the condition of forestry in this country as affecting the timber supply and other matters has of late years received an increasing amount of recognition. One of the latest proofs of this was the appointment last year by the President of the Board of Agriculture of a Departmental Committee to consider and report as to "the present position and future prospects of forestry, and the planting and management of woodlands in Great Britain, and to consider whether any measures might with advantage be taken, either by the provision of further educational facilities or otherwise, for their promotion and encouragement." The Report of the Committee was recently issued as a Parliamentary paper. It covers about a dozen closely printed pages of foolscap, in which the importance of afforestation is demonstrated and the means of improving British methods of forestry discussed. The following passages in the Report have special interest for those connected with the timber and building trades :—

"It will be found in our evidence that experts of high authority have recorded the opinion already expressed in many reliable publications, that the world is rapidly approaching a shortage, if not actual dearth, in its supply of coniferous timber, which constitutes between 80 and 90 per cent. of the total British timber imports. The great area of waste land in these islands, which might be afforested, and with regard to which such valuable evidence has been given, thus becomes a matter of grave national concern. No individual effort is likely to cope with such extensive afforestation, not only because British forestry, as now practised, is inefficient, but because of the capital required, the time during which it remains sunk before producing income, and the lack of all security on private estates for continuous good management from the time that the forest is formed until matured timber is placed upon the market. We do not feel justified in urging the Government to embark forthwith upon any general scheme of State forests under present circumstances ; but the question of planting suitable waste lands under the control of the Crown, or over which the Crown exercises manorial rights, where it may be proved practicable and desirable, is, for the reasons above mentioned, worth the attention of the Commissioners of Woods and Forests. . . .

The present condition of existing woodlands has been repeatedly and clearly reviewed by many eminent authorities. It is the common verdict that timber of the kind and quality imported in such large quantities from the Baltic and similar temperate regions can be grown as well here as anywhere ; in fact, it is a matter of common knowledge that European 'red wood' and 'white wood,' so highly esteemed for structural purposes, are yielded by the Scots pine and the spruce, two of the commonest trees of British woodlands. That foreign is so generally preferred to home-grown timber is in no way due to unsuitability of soil or climate, but is entirely due to our neglect of sylvicultural principles. It is hardly too much to say that until within the last ten years or so owners of woodlands, with few exceptions, failed to realise that the shape, size, and quality of trees could be influenced by anything that they could do. They seemed to imagine that the character of the final product was largely a matter of accident, whereas it is mainly determined by management. They failed to recognise that cultural treatment which suits oak or ash is unsuited to pine or spruce ; and so it has come to pass that British coniferous timber has been gradually excluded by architects from building specifications. As another instance of this we may refer to the statements supplied by the Post Office as to the unsuitability of home-grown pine for telegraph poles.

That the yield of our woodlands can be materially improved admits of no doubt, and the evidence before us unanimously favours immediate and effective provision for bringing systematised instruction within the reach of owners, agents, foresters, and woodmen. This has been on all sides emphasised as the first requisite in any project for the improvement of forestry."

The Committee's chief recommendations are that two areas for practical demonstration be acquired, one in Scotland and the other in England, of from 2,000 to 10,000 acres each ; that additional facilities be afforded, by the appointment of a lecturer on forestry in connexion with the Universities of Cambridge and Oxford, and that example plots be provided in connexion with each of these centres and with Edinburgh ; that a good grounding in forestry form an integral part of the curriculum of the colleges providing instruction in agriculture in Great Britain, and that short courses of instruction suitable for the requirements of young foresters be also provided there ; that provision be made for the education of foresters and woodmen by employing students to work in both the demonstration forests, and that suitable buildings be erected on the ground for the instruction and, where necessary, for the accommodation of these student-foresters ; that lectures be given, under the auspices of the County Councils, in the neighbourhoods where there is a considerable area under wood, and that scholarships be offered in such counties to enable working foresters to attend courses of lectures.

OBITUARY.

MR. EALES.—We have to announce the death on March 13, at his residence in London, of Mr. Christopher Eales, of Somerset Mansions, 9, Welbeck-street, W., and of Worthing, Sussex, in his ninety-fourth year. Mr. Eales practised as an architect and surveyor in co-partnership with his son, Mr. Frederick Ernest Eales, F.R.I.B.A., under the style of Messrs. Christopher Eales & Son, at Somerset Chambers, Welbeck-street. Of the architectural works carried out by the firm the following have been described, with illustrations and plans, in the columns of the *Builder* : Hyde Park residential flats, August 4, 1883 ; the King's Arms Hotel, Edgware-road, September 22, 1883 : Oxford and Cambridge Mansions, Marylebone-road, February 3, 1883 ; additions to 6, Gloucester-road, Regent's Park, N.W., for Mr. R. Borwick, consisting of a new wing, with music-room, billiard-room, nurseries, &c., November 7, 1885 ; and Hyde Park Mansions, by Mr. F. E. Eales, April 14, 1894. The Oxford and Cambridge Mansions and the adjoining Hyde Park Mansions were erected upon the Bond-Cabell Estate in St. Marylebone parish.

GENERAL BUILDING NEWS.

ST. KATHERINE'S MISSION-ROOM, UPPER HELLESDON, NORFOLK.—A new mission-room has just been built at Upper Hellesdon, and dedicated to St. Katherine. The new room is situated on part of a site within the angle formed by the junction of Half Mile-lane with the Aylsham-road. It has been built from the plans of Mr. T. G. Jackson, R.A., the contractor being Mr. T. Mann, of Drayton. It has been built of red brick internally.

UNITARIAN BUILDINGS, HIGHGATE.—The memorial stones of the new building to be attached to the Highgate Unitarian Christian Church were laid recently. These church buildings are known as the Robert Spears' Memorial Church, in commemoration of the founder and first pastor. The new buildings are to take the form of a lecture-hall and class-rooms, facing Highgate Hill and occupying the vacant space between the church and school-room. The new hall will be 20 ft. wide by 36 ft. long, and will hold rather less than 100 people. Behind it there will be a classroom 16 ft. by 10 ft., and over the existing vestry is to be erected a new vestry. These and other minor works have been contracted for by the General Builders' Co., Ltd., of Notting Hill. The architect, Mr. Arnold S. Taylor, has designed the new work to group with the existing buildings. The estimated cost is 1,400*l.*

CLERGY HOUSE, SHEFFIELD.—The unfinished corner building which abuts on Norfolk-row and Norfolk-street has until the past three months for nearly a quarter of a century marred the completeness of the architectural grouping, and been, moreover, an object of curious inquiry and comment to the passer-by. As a first step towards the immediate erection of a new clergy house, it is now on the point of completion. The entrance doorway in Norfolk-row will afford a more convenient access to the sacristies, as well as to a new parish-room, which will be erected at the lower end of the site in Norfolk-street, next to the proposed new rectory, thus leaving open the view of the eastern front of the church. The doorway is surmounted by a sculptured representation of the Annunciation. The shields of arms on either hand have some historical interest, giving, as they do, a clue to the date of the erection in 1879. They are charged with the armorial bearings of Pope Leo XIII. and of the Duke of Norfolk. The plans of the new rectory have been completed, and the work will be commenced during the coming spring. The new buildings are to be executed in brick and stone, harmonising with the general architectural design of St. Marie's Church. The architects are Mr. Hadfield and Mr. C. M. Hadfield, of Sheffield.—*Sheffield Telegraph.*

WESLEYAN CHURCH, OXFORD.—A new church is to be erected at East Oxford for the Wesleyans. The new church will be situated at the corner of Jeune-street and Cowley-road, and has been designed by Mr. Stephen Salter, of the firm of Messrs. Davey & Salter. The church will be 100 ft. in length, 48 ft. in width, and 50 ft. in height. A balcony will run around the entire interior of the building, the total seating accommodation of which will be for 700 worshippers. On either side of the rostrum will be doors leading to the preacher's vestry, the stewards' vestry, ladies' cloakroom, and other offices. The classrooms above will be reached from the gallery ;

the organ will also be in the gallery. At the rear of the chapel the schoolrooms will be erected. On the ground floor there will be an infants' room, 33 ft. by 25 ft., and two classrooms, each 16 ft. square; and on the floor above, a church parlour, 34 ft. by 24 ft., and two classrooms of the same size as those below.

BAPTIST CHAPEL, MORCOTT, RUTLAND.—A new Baptist chapel has just been opened at Morcott. The new chapel, erected on the old site, is 45 ft. in length, with 20 ft. internal width. The structure is of local rubble stone, with Ketton freestone dressings, and covered with Collyweston slates. The old baptistry has been rebuilt in a new position. The outbuildings, covered with blue slates, include a vestry. Mr. J. B. Corby, of Stamford, was the architect, and Messrs. Joyce Bros., of Morcott, the builders.

PRIMITIVE METHODIST CHAPEL, OULTON, NORFOLK.—A new Methodist chapel is to be erected at Oulton. Plans for a new building have been prepared by Mr. F. W. Richards, of Lowestoft. The building is to be 40 ft. long and 28 ft. wide inside. It is to be of red bricks, and the front relieved with white Costessey ware dressings. The contract has been entrusted to Mr. J. S. Youngs, of Oulton Broad.

BANK, ABERDEEN.—The Town and County Bank, Ltd., have erected at Aberdeen a new harbour branch bank. The building occupies a site at the south-east corner of Marischal-street, at its junction with Regent Quay. The elevation to Marischal-street is 83 ft. in length, and to Regent Quay 26 ft., the site being wedge-shaped. The ground floor is to be occupied by the bank, having a public office of about 40 ft. by 21 ft., with agent's room and waiting room, &c. There will be a suite of offices on the first floor, while on the upper floor there is another suite of offices. The building, which is designed in the Renaissance style, and is of granite, consists of a rusticated base, on which is a row of pilasters, extending two stories in height, with Ionic capitals, which are carried up to the entablature at the Regent-quay front, where the principal entrance to the bank is situated. The Marischal-street front is crowned by a balustrade, and is divided into sections by moulded panels. As Shore-lane is at the rear of the bank the building is lighted from three sides. Electric light has been installed. The architect is Mr. R. G Wilson, and the contractors are:—Mason work, Mr. J. Morgan; carpenter, Mr. J. Henderson; slater, Mr. George Farquhar; plumber, Messrs. Thom & Strachan; plaster work, Messrs. James Bannochie & Sons; and painter work, Messrs. Gordon & Watt.

MISSION BUILDING, GOSBERTON, LINCOLNSHIRE.—This building, which is at present under construction, will consist of a nave, chancel, and vestry, and will give seating accommodation for 122 persons. Messrs W. Bucknall and J. N. Comper, of London, are the architects, and Mr. William Wade, of St. Neots, is the contractor.

NEW THEATRE, ST. MARTIN'S-LANE, W.C.—A new theatre has been erected in St. Martin's-lane for Sir Charles Wyndham. The decorations throughout, including the Royal box and the King's room, are in Louis Seize style; the seats in the stalls and dress circle are upholstered in Aubisson tapestry chosen by Sir Charles Wyndham in Paris; there are busts of Louis Seize and of Marie Antoinette in the King's room, presented by Mr. Claude Ponsonby, and here and elsewhere are some Wedgwood medallions. The architect was Mr. W. G. R. Sprague. The electric fittings have been supplied principally by the firm of Escare and Denelle, and have been manufactured from Louis XI. castings The furnishing and decorations have been carried out by Messrs. Waring & Co.

DISTRICT BATHS, BRADFORD.—A meeting of the Baths and Team Labour Committee of the Bradford City Council was held on the 9th inst. at the Town Hall. The City Architect (Mr. F. E. P. Edwards) submitted plans for the district baths to be erected, on sites already acquired, in Leeds-road, Wakefield-road, and adjoining Peel Park, and after examination by the Committee the plans were approved, and the City Architect was instructed to proceed with the preparation of working drawings.

SUNDAY SCHOOL, COLCHESTER.—The Right Hon. James Round, M.P., laid the foundation-stone of the new Sunday school and parish-room for the parish of St. Giles, Colchester, recently. The building, which will be of red brick, is being erected on the south side of the St. John's Green Board School. The architect is Mr. C. E. Butcher, and the builder Mr. T. J. Ward.

WORKMEN'S CLUB, BOLDON COLLIERY.—The foundation-stone of a workmen's club was laid in the Station-road, Boldon Colliery, recently. The building will be one story in height, and built of red pressed bricks, with York stone dressing. There will be a large entrance hall, a luncheon-bar, billiard-room for two tables, luncheon-room, games-room, magazine-room and general newsroom, and smokeroom. Adjoining the club, with access from the luncheon-bar, is the steward's house, with large kitchen. Combined with the steward's apartments is the secretary's office and boardroom. In the basement is cellarage accommodation. The building has been designed by the architect, Mr. O. Mark, of Sunderland, and is being built by Mr. G M. Storey, West Boldon. The building will cost about 3,000*l*.

ST. ANDREW'S-STREET BAPTIST CHURCH, CAMBRIDGE.—This church is to be entirely rebuilt, partly on the foundations of the old building. The tender of Messrs. Kerridge & Shaw, of Cambridge, has been accepted by the committee at 7,458*l*., and the work has just commenced. The architects are Messrs. George Baines & R. Palmer Baines, of London.

SCHOOLS, NEWQUAY.—New infant school and girls' classroom have just been opened at Newquay. Messrs. Cowell & Cowell were the architects of the new schools. Messrs. Trehane & Son, of Liskeard, were the contractors.

VICTORIA MEMORIAL HOSPITAL, SOUTHWOLD.—This building has just been opened by the Right Rev. the Bishop of Ipswich. The new hospital is a two-storied building, erected in Fieldstile-road, opposite the parish church. Carried out in red facing bricks, with a Broseley tile roof, the building has a frontage of 81 ft., with a depth of 34 ft. The ground floor comprises two wards, each 16 ft. by 24 ft., accommodating four beds; a private ward with one bed, a small operating theatre, matron's sitting and bedroom, a double set of bathrooms, and storerooms. On the first floor there are a kitchen, nurse's bedroom, sitting-room, and committee-room, a private ward, and three bedrooms and bathroom for the use of the staff. A Waygood's service lift is fitted in a convenient position. The floors of the wards are of polished pitch pine, and the building is lighted throughout by electricity, installed by Messrs. Mann & Co., of Norwich. The architect was Mr. T. E. Key, of Bloomsbury-square, London, and Aldeburgh, and the builder, Mr. J. Thompson, of Southwold.

WORKMEN'S HOUSES, NORWICH.—Tenders are now being invited for the blocks of workmen's dwellings which are to be erected by the City Corporation of Norwich on the Angel-road estate. Two styles of model dwellings are to be built, a block of two-story flat tenements and one of self-contained tenements. The plans have been prepared by Mr. A. E. Collins, the City Engineer. The self-contained tenements consist of a living-room and large scullery on the ground floor, the scullery having a copper pantry and a sink. There are two bedrooms in the upper floor. Although there are two tenants in each of these houses, the houses are quite self-contained, with separate entrances back and front. There are large gardens in the rear. The two-story tenements are designed on a different principle, there being a common entrance for each group of tenements. The entrance is about 4 ft. wide, under a bold archway. At the farther end of the entrance the separate tenements open off on either hand, there being two rooms in each tenement, a living-room, and a bedroom. The open passage-way also gives direct access to a joint scullery built out at the back, containing pantry and sanitary arrangements. The same arrangement is repeated in the upper floor, except that the entrance is by means of a stairway from the yard at the rear, which gives access to the rooms of the tenement by a passage through the upper joint scullery. The tenants in the upper floor will have the additional advantage of the accommodation afforded by the attics which are lighted by skylights both back and front.

BATHS, HULL.—Colonel A. G. Durnford, R.E., an inspector of the Local Government Board, held an inquiry at the Town Hall, Hull, on the 10th inst., into the application of the City Corporation for sanction to borrow 27,000*l*. for the purposes of the proposed public baths on the Beverley-road. Mr. A. E. White is the City Engineer, and he explained the plans in detail.

WORKING-CLASS DWELLINGS, LONDON.—Messrs. N. S. Joseph, Son, & Smithem have been appointed architects of five blocks of dwellings which the Chelsea Borough Council will build on a site in Beaufort-street, Chelsea, and of similar blocks to be erected by the Four per Cent. Industrial Dwellings Company at Navarino-road and Dalston-lane, Dalston.

STATION HOTEL, KIRKCALDY.—The new Station Hotel at Kirkcaldy, occupying a site at the junction of Bennochy-road and Sang-road, was opened on the 11th inst. Mr. W. Williamson was the architect. The building is provided with the electric light, the fittings being supplied by the Birmingham Guild of Handicraft. The principal contractors were:—George Smith & Sons, builders; T. Scott & Co., joiners; James Wood & Son, plumbers; Alexander Hutchison, plasterer; Oliver Melville, electrical engineer; Currie & Cant, slaters; John Haxton & Co., glaziers; Wyllie & Lochhead, Ltd., Glasgow.

FIRE STATION, ROTHERHITHE.—The memorial stone has just been laid of a new fire station at Rotherhithe. The site faces to Rotherhithe-street and has a frontage to the River Thames. The Works Committee of the London County Council having expressed themselves satisfied with the architect's estimate of 9,525*l*., the work was entrusted to the Works' Department. Operations were begun last October, and it is hoped that the building, which is being erected under the supervision of Mr. W. E. Riley, the Council's Architect, will be ready for occupation next October.

SCHOOL, BRADFORD.—The new school in Greenlane, Manningham, erected by the Bradford School Board, was opened on the 12th inst. The school is divided into three departments—senior mixed, junior mixed, and infants. In the senior department there is an assembly-hall 60 ft. by 30 ft., four classrooms capable of accommodating sixty scholars, and a fifth classroom for fifty scholars. The assembly-hall for the junior-mixed department measures 70 ft. by 38 ft., six classrooms for sixty scholars each, one for fifty scholars, and another for fifty scholars. For the infants there is also a large assembly-hall, and five classrooms with accommodation for sixty children in each. Adjoining the main building and fronting upon Green-lane is a separate school for special classes containing a central hall and two classrooms for twenty scholars each. The two wings at each side of the Green-lane part have been omitted for the present, but are included in a scheme for future enlargement together with a wing at the back by which seven extra classrooms may be added. Mr. E. P. Peterson, of Bradford, was the architect, and the contractors were Messrs. Daykin & Co., masons; Mr. W. M. Binns, joiner; Mr. R. Townend, plumber; Messrs. J. C. & A. Sunderland, plasterers; Messrs. H. Spurr & Sons, concreters; Messrs. Taylor & Parsons, ironfounders; Messrs. Thomas Nelson & Sons, slaters; Mr. Gurnell, painter; Mr. R. H. Dewhirst, wrought ironwork; Mr. G. A. Steinthal, electrician; Mr. Roger Lowe, wood pavior; Messrs. Heywood & Co., patent glaziers; and Messrs. Ashwell & Co., ventilating engineers.

PROPOSED EXTENSIONS, BLACKPOOL VICTORIA HOSPITAL.—An appeal is to be made to the public for 15,000*l*. to carry out extensions to Victoria Hospital, Blackpool. Alderman Mather, J.P., offered his services as honorary architect; these were accepted, and he prepared the plans which are to be carried out. On the ground floor of the administrative block increased kitchen accommodation will be provided, together with scullery, larder, pantry, receiving ward, nurses' and servants' dining-rooms adjacent thereto. At the rear of the kitchen it is proposed to construct a more capacious laundry, stores, and linen rooms, and servants' lavatories and conveniences. The proposed extensions to the male and female wards, which will be continuations of the existing wards in an easterly direction, provide for sixteen additional beds in each case, with lavatory and other accommodation. Connected on each side by corridors with these additional wards will be an anæsthetic-room entering upon an enlarged operating theatre, with dispensary and doctors' lavatory leading therefrom. The additions at the rear, under the proposed ward extensions, will comprise, under the male ward, an outdoor patients' department, and under the female ward male and female refractory wards. Under the laundry and operating theatre will be provided storage rooms for coals and wood, bath chairs, and tools, and also heating apparatus. The outdoor patients' department will contain a waiting-room, consultation-room, male and female examination-wards, with conveniences in each case, eye-room, dispensary, and storeroom. There will be two isolation patients' wards, one for each sex, and each containing six beds. Nurses' kitchens and sitting-rooms, with lavatory and other accommodation, will also be provided in connexion therewith. On the first floor it is proposed to provide eight additional single bedrooms, and one bedroom for nurses, with bathroom and lavatory and boxroom. At the rear, over the laundry, will be the ironing-room connected with the laundry by an independent staircase, and lifts for linen. The attic floor will be devoted to accommodation for night and private nurses.

HIGH SCHOOL FOR GIRLS, NEW KENT-ROAD, LONDON.—The St. Saviour's and St. Olave's Grammar School for Girls has just been opened by the Princess of Wales. The site of the school is in the form of a triangle, one side having a frontage of some 320 ft. to the New Kent-road, another a frontage of some 112 ft. to Buckenham-square. The third side abuts on the yards of the houses in Warner street. The large hall faces the New Kent-road and the various classrooms, which are arranged in connexion with it, face Buckenham-square. The principal entrance is from the New Kent-road whilst the pupils enter the school from Buckenham-square. On entering the building by the principal entrance, on the right-hand side a waiting-room is provided, and on the left an office of administration. Passing through the swing doors, access is obtained to the entrance corridor at one end of which is the principal staircase, and at the other a door leading to the playground. The large hall, measuring at the floor level 71 ft. by 35 ft., is entered from the corridor. It has a series of large windows on the one side, and on the other a passage divided from the hall by a series of piers and open arches which admit to three ground-floor classrooms. At the northern end is another transverse corridor, from which are approached the manual and kindergarten rooms, also the lavatory and cloakrooms for the girls. The pupils' entrance and staircase is at the eastern end of it. At one end of the large hall is a gallery with space for an organ. On the first floor there are three more classrooms, entered from an arcade, which is open to the large hall, the headmistress' room, teachers' cloakroom, &c; the science lecture-room, chemical laboratory, and art room being also on this floor at the northern end. A common-room for the mistresses, and four music practising-rooms are placed on a mezzanine floor at the south end of the building. On the top floor are the cooking classroom, dining-hall, kitchen, and offices, in addition to three more classrooms. There

is a separate service staircase with a lift arranged in the tower at the south-east corner, from the ground floor up to the kitchen on the top floor. A house for the caretaker has been erected in Buckenham-square, with access to the basement of the main building. The lighting throughout is by electricity. The elevations externally are treated with red bricks, Bath stone being used for the window dressings, &c. The original building contract, exclusive of fittings, boundary-walls, playgrounds, &c, amounted to 20,000*l.*, and the work has been carried out by Messrs. William King & Son, of Vauxhall Bridge-road, S.W., and Mr. George Peat was clerk of the works. The architect was Mr. W. Campbell Jones.

CARDIFF NEW MUSEUM.—Councillor S. Robinson presided at a meeting of the Museum Committee of the Cardiff Corporation on the 13th inst., when Mr. Edwin Seward, the architect, submitted amended plans for the lengthening of the front to the extent of 25 ft. This will mean that each wing will be lengthened 12 ft. 6 in.

UNITED FREE HIGH CHURCH HALLS, ELGIN.—New Free Church halls are to be erected in North Guildry-street, Elgin. The cost of the new buildings, including heating, furnishing, &c., will be about 1,250*l.* The contractors for the work are:—Builders, Davidson & Hay; carpenters, Mackie & Mackenzie; slater, Andrew Davidson; plumbers, John Gordon & Son; plasterer, James Brodie; painter, John James; and for the ironwork, George Souter. Messrs. A. and W. Reid & Wittet are the architects.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. Rowland Plumbe, architect, 13, Fitzroy-square, W., has taken into partnership Mr. Frank M. Harvey, who has been associated with him for a period of over twenty-three years. The practice will be continued at the above address under the style of "Rowland Plumbe & Harvey."

COURT OF COMMON COUNCIL.—At the fortnightly Court of Common Council, on Thursday last week, Alderman Sir Henry Edmund Knight moved "That it be referred to the Streets Committee, with directions to confer with the City Lands and Bridge House Estates Committees, to consider the provisions of the London Building Act, 1894, and other cognate Acts, and their effect on property, trade, and commerce in the City of London; and to report what amendments therein are desirable." He said that the Act of 1894 had caused a lot of useless expense, and had driven some trades from the City, and mentioned several cases where great inconvenience had been caused by the Act. He wished the Corporation to be in possession of such information as would enable them to draft a Bill of their own. What was suitable for Westminster was not suitable for the City. The motion was seconded by Deputy Baddeley, and carried.—It was agreed to approve of the City and South London Railway Bill for extending their line from the Angel to Euston and for taking over the powers of the City and Brixton Co., subject to the insertion of the City's clauses and the depositing of 15,000*l.* with the Corporation as a guarantee for the proper completion of the works in the City. The City and North-East Suburban Electric Railways Bill for a line from the City to Waltham Abbey and Southgate was approved, subject to the same conditions, the sum to be deposited being 20,000*l.*—The following recommendations of the Streets Committee were agreed to: That the carriageway of Little George-street, Minories, be paved with asphalt at an estimated cost of 250*l.* That the sewer in Cornhill be reconstructed for a distance of about 74 ft. west from White Lion-court at an estimated cost of 400*l.* That the contracts with the Val de Travers Asphalte Co. for maintaining the pavements of the undermentioned streets be extended as follows:—Queen-street (Pancras-lane to Queen Victoria-street) for ten years at 1s. 6d. per yard super. per annum; London-wall (Moorgate-street to East of Blomfield-street) for one year at 1s. 6d. per yard super.; King's Arms-yard (Moorgate-street to Coleman-street), Telegraph-street, Great Bell-alley, and Noble-street for ten years at 10*d.* per yard super. per annum; Camomile-street, Edmund's-place, Wood-street (Addle-street to London-wall) for ten years at 9d. per yard super. per annum; Castle-street, Cripplegate, Barge-yard, Bucklersbury (Queen Victoria-street to Walbrook), Bow-lane (Cannon-street to Great Trinity-lane), for ten years at 6d. per yard super. per annum; New Broad-street and Great Winchester-street for ten years at 3d. per yard super. per annum; Old Change (Cannon-street to Knightrider-street) for ten years at 4d. per yard super. per annum; Queen-street (Cheapside to Pancras-lane) for ten years at 1s. 6d. per yard super. per annum (an increase of 9d. per yard per annum on the existing contract); and New Broad-street (London-wall to Liverpool-street) for two years at 1s. 3d. per yard super. per annum (an increase of 6d. per yard per annum on the existing contract. The following are footways only:—Duke-street (now Little Britain), for ten years, at 7d. per yard super. per annum; and Royal Exchange and Bishopsgate-street Within, for ten years, at 6d. per yard super. per annum. Where not mentioned the price is the same as the existing contract. It was agreed also to extend the following contracts:—With the Improved Wood Paving Co., for maintaining the carriage-way of King William-street and Gracechurch-street, for a period of fifteen years (the Corporation reserves the right to terminate the arrangement at the end of five or ten years), at 1s. 9d. per yard super. per annum; and with the French Asphalte Co., for maintaining the footway of St. Paul's Churchyard for a period of ten years, at 6*d.* per yard super. per annum (an increase of 2d. per yard on existing contract), and for maintaining the footway pavement of Aldersgate-street for a period of ten years at 6*d.* per yard super. per annum. [The Streets Committee were requested to arrange for a conference, on the Building Act question, between the Corporation, the London County Council, and the Councils of the City of Westminster and the Metropolitan Boroughs.]

WATERPROOF PANEL BOARDS.—Waterproof slabs suitable for use as a substitute for lath and plaster or matchboards in the construction of light partitions, ceilings, or verandah roofs, are being manufactured by the West Drayton Millboard Co. Some panels which have been sent to us for inspection are of remarkable strength. The material appears to be waterproofed millboard prepared under great pressure. The boards can be manufactured of almost any thickness from $\frac{3}{16}$ in. upwards, and in any sizes up to 8½ ft. by 4½ ft. The price of the material varies from 2d. to 6*d.* per sq. ft.

WORKMEN'S PROPOSED CONCRETE DWELLINGS, LIVERPOOL.—At a meeting of the Liverpool Housing Committee, Councillor Colton in the chair, a letter was read from Mr. Edward Mines, offering to erect workmen's dwellings of similar dimensions to the concrete houses proposed by the City Engineer, but of bricks and mortar, at 25 per cent. less than the City Engineer's estimate of 1,230*l.* It was resolved that Mr. Mines be found a piece of land for the purpose, which would be equally convenient in every way, upon his entering into a contract to erect a similar block of cottages to the satisfaction of the Committee, according to the plans and an agreed specification, for 25 per cent. less than the City Engineer's estimate.

MEMORIAL TABLET, PUTNEY.—A memorial tablet of alabaster, bearing a sculptured likeness of the late Dr. Woodhouse, M.D., F.R.C.S.Lond., for thirty-six years visiting Medical Officer of the Royal Hospital for Incurables, Putney Heath, was unveiled recently in the Assembly-room of that institution. The medallion is framed in walnut, and occupies a corner niche at the top end of the assembly-room. It is the work of Mr. Hems, of Exeter.

ESTIMATES, CIVIL SERVICE.—The estimated expenditure upon public works and buildings for the year ending on March 31, 1904, shows a net increase of 265 699*l.* as compared with the grants in the Session of 1902; the total estimate amounts to 2,557,712*l.* The estimate for Royal Palaces is 80,600*l.*, an increase of 7,800*l.*; for Royal parks and pleasure-grounds, 101,400*l.*—increase, 3,676*l.*; Houses of Parliament buildings, 43,700*l.*—decrease, 6,200*l.*; miscellaneous legal buildings in Great Britain, 66,120*l.*—increase, 17,320*l.*; diplomatic and consular buildings, 55,500*l.*—increase, 14,100*l.*; revenue buildings, 564,000*l.*—increase, 193,000*l.*; public buildings in Great Britain, 447,000*l.*—increase, 17,613*l.*; rates upon Government property, 571,697*l*—increase, 33,439*l.*; and, in Ireland, public works and buildings, 216,128*l.*—decrease, 6,044*l.*, and railways, 107,214*l*—decrease, 18,588*l.*

ROYAL INFIRMARY, MANCHESTER.—The Corporation of Manchester have under their consideration a project for purchasing, at the price of 400,000*l.*, the buildings and site in Piccadilly of the Royal Infirmary, in view of a concurrent scheme for the erection of a new infirmary on a site of 12 acres at Stanley-grove, Longsight, with the proceeds of the sale; the trustees, it seems, are minded to erect new buildings upon a fresh site rather than enlarge the existing premises. The Royal Infirmary, originally established in 1752 at Shude Hill by Dr. White and Joseph Bancroft, was removed three years afterwards to buildings that had been erected by subscription in Piccadilly. A lunatic hospital and asylum was founded in 1795, and in 1792 the trustees established a dispensary: an Act of 1844 empowered the committee to erect a new lunatic asylum. The south and north wings of the infirmary were added in 1848-51; in 1853 the dome was added to serve as a clock tower, and the Piccadilly front was rebuilt. About twenty-five years ago the dispensary and out-patients' departments were opened in the new building which faces Parker-street. It is stated that a special committee, nominated by the Corporation, have agreed to recommend the acquisition of the Piccadilly site for the erection thereon of an art gallery and a free library.

THE ILLUMINATING POWER OF GAS.—The Sanitary Publishing Co. is about to issue a table compiled by Mr. W. J. Dibdin, by means of which the so-called "true" illuminating power of any gas may be readily ascertained. The table is based upon a law enunciated by the late Dr. Pole more than thirty years ago. The table is applicable to any gas, whatever the illuminating power, provided the *standard* rate of consumption is 5 cubic feet per hour. For our own part, we see little utility in ascertaining the value which the gas would possess if burned at a 5 cubic foot rate, and think that the illuminating power of a gas in any given burner should be the maximum efficiency of the gas in that burner, whatever may be the rate of consumption required to yield that efficiency. There is also no reason why the illuminating power should not be expressed in candles per unit of gas (*i.e.*, per cubic foot), as in the case of incandescent burners. Those, however, desiring to know the illuminating value of any gas when calculated by Dr. Pole's method, instead of by the usual method of simple proportion, will find Mr. Dibdin's table both useful and interesting.

ICKFORD CHURCH, BUCKINGHAMSHIRE.—It is proposed to raise a fund of 1,680*l.* for the restoration of St. Nicholas parish church in memory of Archbishop Sheldon, who, being then warden of All Souls College, was presented to the living by Charles I. The church, having 150 sittings, consists of a chancel, nave, and two aisles, with a tower, and embodies many interesting features in the Transitional and Early English styles. The tower has a saddle-back roof; in the chancel are a low-side window and an Early English piscina with a projecting basin.

VENETIAN BRIDGES.—Alluding to the protests which have been made abroad against the building of a bridge to connect Venice with the mainland, the British Consul, in his report for the year 1902, explains that the proposed bridge is to start from an extreme point of the town, fronting the mainland, where there is not a single monument or building of artistic importance of any kind, and is to run over shallows parallel to the railway bridge up to San Giuliano. The majority of the Communal Council have decided in favour of the proposal. It is added that a project has also been before the municipality at the instance of the Adriatic Railway Company for widening the actual railway bridge, reserving a portion of the new space to lay down a new track for goods traffic, and granting the use of the remaining part to pedestrians and cyclists, but the railway company would exclude tramways and motor-cars. In the event of the project being adopted the expense to be met by the municipality would be 52,000*l.*

THE MUNICIPAL YEAR BOOK.—The Municipal Year Book of the United Kingdom for 1903 (Edward Lloyd, Ltd., Salisbury-square, E.C.), has just been issued. The Editor, Mr. R. Donald, has included a complete digest of the Education Act in the present issue, the important clauses being set out in full. After a brief sketch of the notable municipal developments in 1902, and a synopsis of the chief Acts passed last year affecting local government, the arrangement is kept as much as possible alphabetical as follows:—I. London and its Government (London County Council, City Corporation, Metropolitan Boroughs. Summaries of work, lists of members and officials). II. England and Wales—1. Towns are arranged in alphabetical order and under each town will be found a summary of the work carried on by the Corporation, showing the extent of its activities, with statistics of expenditure, rateable values, debt, rates, &c, with the exception of statistical returns on (*a*) water, (*b*) gas, (*c*) electricity supplies, (*d*) tramways, (*e*) housing, and (*f*) telephones, to which special sections are devoted. Under the heading of each town will also be found complete lists of the members and chief officials of the Local Authorities. 2. Urban District Councils, particulars of works, statistics, officials. 3. Rural District Councils, chief officials. 4. County Councils, clerks. III.—Municipal Government in Scotland. IV.—Municipal Government in Ireland. The work is a most useful and interesting guide to municipal affairs.

PRESENTATION TO A BUILDING MERCHANT.—Last week Alderman Sessions, the head of the firm of Sessions & Sons, timber and building material merchants, of Gloucester, was presented with a testimonial from the employees of the firm on the occasion of his leaving Gloucester to settle at Kendal. The gift consisted of a roll-top desk, with pigeon-holes, &c., on which was fixed a silver plate with the inscription:—"Presented to Alderman Frederick Sessions on his leaving Gloucester by the staff and workpeople of Sessions & Sons, Ltd., and others formerly with the late firm of J. Sessions & Sons as a token of their sincere esteem and respect. March 10, 1903."

ARCHÆOLOGICAL DISCOVERIES IN LEICESTER.—The extensive excavations that have been proceeding recently in connexion with the High-street improvement have resulted in the discovery of further indications of the Roman settlement in Leicester. Workmen were engaged digging the foundations of some buildings about to be erected in Town Hall-lane, when, about 14 ft. below the surface, they uncovered the remains of two Roman pavements, or possibly detached portions of one pavement. The larger fragment brought to light measures about 3 ft. by 4 ft., composed of ornamental limestone tesseræ. An adjoining fragment is worked out in a red and blue pattern. Both pieces are similar in construction to a Roman pavement found in Highcross-street about two years ago. The squares slant considerably when compared with the present elevation of the adjacent land, but it is difficult to determine the cause of this. Alderman Wakerley, the owner of the land, hopes to be able to preserve the remains intact, but

if this is not found possible it is to be hoped that it may be added to the excellent collection of Roman remains at the Museum. A quantity of Roman pottery, but none of it particularly interesting, has been found on the site of the new Lloyd's Bank premises in High-street, and three Roman kilns containing half-baked pottery have also been found.—*Leicester Post.*

ROYAL COMMISSION ON LONDON LOCOMOTION.—At the first sitting of this Commission, on Friday last week, evidence was given by Sir H. Jeykell and Col. Yorke, both of the Board of Trade. The last witness suggested that tramways in congested districts should be constructed underground. He was of opinion that obstruction was frequently caused by the overloading of carts, and mentioned particularly builders as being offenders in this respect. The only real solution of the problem was, however, wider streets and the construction of new thoroughfares.

BUILDING BY-LAWS, SOUTHAMPTON.—At the meeting of the Works Committee of the Southampton Town Council, a letter was submitted from the local architects and surveyors, as referred by the Council, asking that a conference might be arranged for the purpose of considering certain suggested amendments to the by-laws relating to streets and buildings; also a letter from Messrs. W. H. Mitchell, Son, & Gutteridge, setting out the specific by-laws which, in their opinion, require amendment. It was resolved that a copy of the letter containing the suggested amendments be typewritten, and forwarded to each member of the Committee, together with a copy of the by-laws, and that the matter be further considered at a subsequent meeting.

MANCHESTER CORPORATION AND THE FAIR CONTRACTS CLAUSE.—The controversy with regard to the interpretation of the fair contracts clause recently adopted by the Manchester Corporation will in all probability be amicably settled in the course of another two or three weeks. On the 16th inst. Mr. George Macfarlane, on behalf of the Master Builders' Association, laid the views of the employers before the Special Committee appointed by the City Council, and shortly afterwards Mr. G. D. Kelley and Mr. Tom Fox, representing the Manchester and Salford Trades and Labour Council, had an interview with the Committee. It appeared that much of the dispute over the clause was due to misinterpretation of its terms. Therefore, to put the matter quite clear, the Committee resolved to draft the clause afresh. Mr. Macfarlane also undertook to draw up a clause which would embody the wishes of the employers. Altogether, it was stated, there was a better understanding as the result of these conferences, and the Committee are hopeful that at the April meeting of the Council they will be in a position to submit a recommendation which will be acceptable to all the parties concerned.—*Manchester Guardian.*

INTERNATIONAL FIRE EXHIBITION.—The Committee of the Loan Section of the proposed International Fire Exhibition are desirous of being able to present recent designs of fire-stations that are of an instructive and up-to-date character and of some architectural pretensions. Architects who have designed and executed fire stations since 1885 are hence requested to put themselves in communication with Mr. F. R. Farrow, Joint Hon. Sec. of the Section, 29, New Bridge-street, London, E.C., giving particulars and designs that could be exhibited, preferably accompanied by some print or photograph. The Committee are desirous of hanging well-drawn elevations, perspectives, or large photographs, with ground-floor and first-floor plans. The drawings or photographs must be framed, but there is no limitation as to character of frames or margins. The drawings would have to be sent in by the middle of April, and will be hung until the close of the Exhibition towards the end of September.

ASSOCIATION OF MANAGERS OF SEWAGE DISPOSAL WORKS.—The first ordinary meeting of this Association will be held at the Carshalton Sewage Works at 2 p.m., March 28, being visit, inspection, and description of the works, under the guidance of Mr. Wm. Willis Gale, Surveyor to the Council. Afterwards there will be an address by the President, Mr. W. D. Scott-Moncrieff; followed by a visit to the County Borough of Croydon sewage farm at Beddington, under the guidance of Mr. John E. Farmer, Manager.

CAPITAL AND LABOUR.

LEEDS PAINTERS' DISPUTE.—The dispute between the Leeds operative painters and the master painters has at last come to an end. The resolution passed by the Masters' Association was to the effect that they would pay at the rate of 8d. per hour, the starting-time to be 7 30 a.m. This practically means that the conditions in force before the dispute occurred will continue.

HULL BUILDING TRADES.—The building trade of Hull is again threatened with a dispute of large dimensions, although it is hoped this will be avoided by the adoption of terms agreeable to both parties. The initiative in the matter has come from the masters, who are desirous of securing an alteration in the working rules. These rules were only agreed upon between the parties in May of last year, and it was understood they were to remain in force for at least two years. The employers, however, have served a notice upon the Building Trades Federation asking for an alteration. One of the principal changes they seek to effect has reference to short time during winter months. By the agreement come to last May, for five weeks before Christmas and for an equal period afterwards the men commence work at seven o'clock, having half an hour for breakfast, an hour for dinner, and cease at five o'clock. The masters want them to commence work at eight o'clock (having breakfasted before), have half an hour for dinner, and cease work at 4.30, the object being to secure the maximum amount of daylight each day. Another suggested alteration, and one which is strongly opposed by the men, has reference to the time when notice of a reduction of wages or lock-out can be given. By the existing rules that can only be given in May; the masters want the power to give it in November as well. The men have submitted counter proposals. Negotiations are proceeding between the parties, and a conference has been arranged. If a settlement is not arrived at thousands of men will be affected.—*Hull Daily News.*

LEGAL.

AN ENGINEER'S ACTION AGAINST A DISTRICT COUNCIL.

THE hearing of the case of Lawford *v.* the Billericay Rural District Council concluded in the Court of Appeal, composed of Lords Justices Vaughan Williams, Stirling, and Matthew, on the 13th inst. on the appeal of the plaintiff from a judgment of Mr. Justice Darling, sitting without a jury in the King's Bench Division on April 14, 1902 (the case was reported in the issue of the *Builder* of April 19, 1902).

The action was brought by the plaintiff, an engineer, to recover from the defendants 169*l.* 14*s.* as remuneration for his services in preparing a Report and plans, &c., in connexion with a sewerage scheme which was being carried out by the Council. The defence was that as the common seal of the defendants was not affixed to the agreement, the agreement was not valid or binding on the defendants.

The facts were as follows:—The plaintiff was in July, 1899, retained under the common seal of defendants to act as Engineer for the defendants in connexion with some sewerage works which defendants were thinking of carrying out in the parishes of Shenfield and Hutton. The plaintiff under this agreement had to prepare plans, specifications, attend an inquiry held on behalf of the Local Government Board, and obtain tenders for and superintend the work. In September, 1900, defendants discovered that the drainage of Shenfield Common was unsatisfactory, but this portion of the district was not in the original sewerage scheme. A committee of the defendant Council thereupon passed a resolution that plaintiff should be requested to go to Shenfield Common and report what work was necessary, and to give an estimate of the probable cost. The plaintiff did as requested. The plaintiff was then verbally instructed by the committee to act as engineer in respect of the extension work, and to do like services rendered under the agreement of July, 1899, and this was confirmed by the defendants. In the correspondence plaintiff suggested that the agreement of July, 1899, should apply to and include services in respect of the extension work, and the Clerk to the Council replied that the Council were agreeable that the agreement relating to the Shenfield and Hutton scheme as to the payment of plaintiff's fees should apply to the Shenfield Common extension, but with no variation. The plaintiff duly performed the services in question, and one of his firm attended the Local Government Board inquiry when the extension scheme was sanctioned. The plaintiff aftewards took out quantities for the work. Tenders were advertised for and made, but none were accepted. The defendants admitted that the plaintiff had full instructions for the work he performed, but they relied on a number of cases to show the necessity of a corporate body contracting under their common seal. Mr. Justice Darling held that the agreement to be binding on the defendants should be under their common seal, and on that ground gave judgment for the defendants. Hence the present appeal of the plaintiff.

Mr. C. A. Russell, K.C., Mr. Danckwerts, K.C., and Mr. Montague Lush, K.C., appeared for the appellant, and Mr. Macmorran, K.C., and Mr. Naldrett for the respondents.

At the conclusion of the arguments, Lord Justice Vaughan Williams, in giving judgment, said he thought the appeal should succeed. His lordship, having gone through the authorities bearing on the subject, said he preferred to follow the decision in the case of "Clarke *v.* The Cuckfield Union," which he thought was founded on justice and convenience. In his opinion, the consideration in the present case was clearly executed, and the defendants had accepted and availed themselves of the plaintiff's services and of his work. That being so, there was an implied contract to pay for them.

The other Lords Justices concurred, and the appeal was accordingly allowed, and judgment entered for the plaintiff.

ACTION AGAINST AN ARCHITECT.

THE case of Steljes *v.* Ingram came before Mr. Justice Grantham and a special jury in the King's Bench Division on the 12th instant, an action by the plaintiff, an electrical engineer of South Tottenham, to recover from the defendant, an architect of Theobald's-road, damages for alleged negligence in the performance of his duties as architect.

Defendant, by his defence, denied any negligence on his part, and pleaded that the plaintiff had accepted 4*l.* 4*s.* in satisfaction of any defects in the work.

Mr. Duke, K.C., and Mr. George Wallis appeared as counsel for the plaintiff, and Mr. S. T. Evans, K.C. and Mr. Thora Drury for the defendant.

Mr. Duke, in opening the case, said the plaintiff purchased a house and land at Tottenham, and, desiring to erect a larger house on the adjoining land which he had purchased, employed the defendant as his architect to prepare plans and specifications. After this had been done tenders were invited, but the lowest being 820*l.* plaintiff decided not to accept them. The plans were then modified, and defendant introduced Messrs. Knight & Sons, builders, to the plaintiff, and their tender of 655*l.* was accepted. The contract was duly entered into and the house erected. It had not been finished long when it was discovered that the mortar and concrete used were bad, that the ceilings fell down, the back addition was sinking, and the walls cracking, whilst the chimneys were too short, and the brickwork generally bad. In fact, the masonry was loose and open. It would cost about 200*l.* to put the house into the condition it should have been in. These defects, he alleged, were due to the want of supervision on the part of the defendant.

Plaintiff was called, and stated that the house was altogether bad. He had paid both the builder and the defendant.

In cross-examination, plaintiff stated that his son was articled to the defendant, and it was not in consequence of what had taken place over his son that the action was started.

Mr. G. E. Nield, an architect, of 222, Strand, examined, said he had made a survey of the house, and had the specification with him. The house was not in accordance with the specification in quality. The masonry was not properly done. The mortar joints were large, and the mortar was of bad material. A dinner-knife would go into the mortar up to the hilt. He put the life of the house at twenty years.

Mr. H. Northcroft, F.S.I., a quantity and measuring surveyor, of Regent-street, and Mr. Benjamin Tabberer, F.R.I.B.A. and F.S.I., corroborated generally. The prices paid for the materials were fair prices.

The defendant, called and examined, said he gave every possible supervision to the work. He saw the materials of which the mortar was made, and it was good. He did not see the whole of the mortar mixed. The bricks cost 33*s.* a thousand. The concrete was good, and he saw no cause of complaint. He saw no cracks in the buildings. The materials of the house were of very good class.

Mr. John Knight, carrying on business as Messrs. J. Knight & Sons, builders, of Chelsea, said he paid a fair price for all materials used in the house. The house was a well-built house.

Mr. George P. Pratt, A.R.I.B.A., formerly with the defendant, said the defendant went twenty-five times to watch the work whilst it was in progress. Witness went there himself five times, and the work was being properly carried out as far as he could see. The house was well built and the concrete was of a substantial character.

Mr. G. Rogers, Military Superintendent of Works on the Salisbury Plains, said he was with the Tottenham Urban District Council formerly and had the work in question under his supervision. He inspected and passed the concrete, and he passed it as being in accordance with the by-laws of the Council.

Mr. J. D. Mathews, F.R.I.B.A., said he had inspected the house and found it very fairly built indeed. He saw nothing to indicate any negligence on the part of the architect.

Mr. W. H. White, A.R.I.B.A., also corroborated.

Counsel having addressed the jury, and his lordship having summed up, the jury, after a short deliberation, returned a verdict for the plaintiff for 20*l.* damages.

Judgment accordingly.

AN ARCHITECT'S CLAIM:
EARL V. PATTENDEN & CO.

THE hearing of this case, before his Honour Judge Addison, K.C., the first part of which was reported in our issue of March 7 (pp. 259-60 *ante*), was concluded at Southwark County Court on Monday, when the defence and counterclaim were proceeded with.

Mr. Warren, barrister, again appeared for the plaintiff, and Mr. Rose-Innes (instructed by Mr. Henry Hilbery) for the defendants.

Mr. William Beer Pattenden said that in February or the beginning of last March he agreed to hire the churchyard from the rector, and he was introduced to the plaintiff, who already had plans drawn for a Coronation stand. Witness told him he did not intend to employ an architect, and asked what he would sell his plans for. The plaintiff refused to

do that. After an interview with the builder the three came together on March 10, and the plaintiff for the first time produced the plans. The builder expressed surprise that the west-front tage was arranged so that people would look straight down the Strand. Another point in regard to the east end was pointed out, whereupon the plaintiff remarked, "I have studied these plans for four months, and you may take it that these are perfect, and every person will be able to get a good view and you will be able to sell the worst at not less than 3*l.* 3s. each." He upon that agreed to pay the plaintiff a fee of 200 guineas and 5 per cent. on the net profits realised from the stand, for the plans and his services. Within a week, however, he discovered that the plans made no provision for gangways, and he spoke to the plaintiff about it. The plaintiff expressed surprise at the suggestion, remarking that the people would clamber over the seats. Witness pointed out that such a thing was impracticable, especially in view of the prices being charged (from 3*l.* 3s. to 10*l.* 10s.), and although he was nearly overborne, he insisted on gangways being provided. The plaintiff remarked that he (witness) had not got to worry about how the people got to their seats or out of them when the stand was full, as he (witness) would by that time have taken his money, and that was all he had got to see to. Witness pointed out in reply to that observation that his first object was to make a profit, but at the same time he wanted to make the stand safe and comfortable. The gangways were put in, and they made the seating accommodation 200 seats less, which represented about 800 guineas, taking an average price. When the stand had been erected witness found that a large number of persons would not be able to get a view of the procession, and, on pointing that out to the plaintiff, he remarked that "people would see much better when standing up." In consequence of that defect, some of those particular seats had to be sold at a very low price. The plaintiff attributed all the bungling to the fact that the builder had departed from the plans, but witness expressed surprise that he (plaintiff) had not said anything about it in the hearing of the builder. He further pointed out that the builder could not have gone astray if he had been on the job, as he ought to have been. Witness also discovered that seven rows of seats instead of eight had been put up in one place, and the builder explained that there was not sufficient room to erect eight rows with 2 ft. 3 in. from back to back, as had been specified.

The plaintiff (in reply to his Honour): There was room for eight rows with 2 ft. 3 in. from back to back at one part, and 2 ft. 1½ in. at the narrowest.

Continuing, the defendant said that the builder admitted that he altered the staircase at the east end, or else the people could not have seen anything. No complaint was made by the plaintiff about the builder not following out his plans until witness pointed out the faults in the stand. As to the plaintiff's suggestion that he (witness) could not interfere with the builder because he could not pay him, that was an absolute lie. He paid the plaintiff every penny as it became due, as also the builder. The plaintiff became so worried and dejected over the job that witness advised him to go to Worthing and have a rest, which he did.

After the rest the plaintiff proceeded with the making of seat-letting plans, a job he had refused to do some days before. On July 4 after the procession had been abandoned, the plaintiff called upon him and asked for a cheque for the 50 guineas balance. Witness expressed surprise and indignation, suggesting that he had been paid more than he deserved after the muddle he had made and the loss he had caused him, and telling him that several gentlemen who had lent money for the venture had advised him to take proceedings against him. The plaintiff jumped up, held out his hand, and remarking, "Very well, goodbye; we shan't quarrel over that," left. He (defendant) censured the builder for having departed from the plans to improve the stand without his knowledge.

It was an absolute falsehood that the plaintiff complained in April that the builder was not keeping to the plans. It was not for him (defendant) to suggest how certain seats should have been arranged; his complaint was that the seats were so arranged that people could not get a proper view. He did not lodge with the Westminster Council a tracing of the plaintiff's plans of which he complained, for the October procession. His builder lodged a plan on his behalf, but he could not say what plan it was. Since the last hearing he had had inquiries made, and discovered that the plaintiff was correct in his assertion that the plans were passed by the Westminster Council without the gangways being in, but he was informed that the gangways were always dealt with by the Council after the plans had been passed, and not when originally agreed to. At the time the fatal news of the postponement came the seats on his (defendant's) stand were selling as fast as money could be taken.

Mr. Warren: When you discovered that the builder was deviating from your plans, was the only step you took to complain to Mr. Earl?

Defendant: Yes.

Re-examined: The plans provided for six rows of seats on the top tier of the west front, but after they had been erected and the tickets sold, eighty-six had to be exchanged because the holders could not get a good view from the front rows or any at all from the back owing to the low front. He called the attention of the plaintiff to it and he said it was the builder's fault; he had done his best and could not do any more. The plan lodged by the builder for the October stand, was not like the plaintiff's, he found after examination of the two. It provided for only one tier. The October stand was not erected after all.

Mr. Thos. Elkington said he was a builder and had had great experience in the erection of stands. He was employed by the defendant for the erection of the stand in question, and when he first saw the plans he asked the plaintiff if all the persons who would occupy seats on the west front would get a view. The plaintiff replied that they would and that he had given months of study and consideration to the plans. He proceeded with the east side first and when he had got the posts up he tried the sight line and found that occupants could not get a view of the roadway but 4 ft. of the shops on the other side. He altered it by raising the back and lowering the front, the plaintiff having suggested that the people could stand up to obtain a view. At the west end the seats faced Wych-street instead of the Strand as intended, and he had to alter the rake of the tiers. All the alterations were made after consultation with Mr. Earl who, in regard to each, said he did not see what else could be done. He (witness) could not have made a mistake as he always consulted Mr. Earl before fixing a timber.

Cross-examined: He used other timbers than specified in some places because of the rush on the market, but they did not affect the strength. The plaintiff was consulted and agreed to what was used. The defendant did not know anything about the alterations in the rake until the work was finished. He did not agree with Mr. Dicksee and Mr. Ford, the District Surveyors who gave evidence for the plaintiff, that a good view could have been obtained from every seat if the stand had been erected in perfect accord with the plaintiff's plans. Mr. Earl never complained of his variations.

Re-examined: He and his foreman tested the view from the stand. He paid the plaintiff 100*l.* 1s. 6d. for the quantities.

His Honour: I have a very great dislike to this system of inviting tenders for a job when it is really settled that a certain builder is to do it. To waste other people's time and money in that way is too bad. It is like some country districts where they advertise for a town clerk and half the solicitors in London take the trouble to reply when it has already been settled who is to occupy the post.

Mr. F. Thos. Wilberforce Goldsmith, A.R.I.B.A., said that he inspected the stand and the plans on July 21, and found that, as originally planned, all the persons who would have occupied it could not have got a view of the procession. The seats at the west end of the stand commanded a very poor view of the centre of the roadway, whilst at other parts no view could be obtained at all. The plans were very cleverly drawn and the specifications and drawings were very skilfully executed, but they failed to provide the chief object that such a stand would be erected for, namely, giving every occupant a view of the centre of the roadway along which the procession would have passed. With the aid of a model witness proceeded to show the line of vision, remarking that in one block the people could not have seen the King (if he had passed) unless he had been raised from the ground 11 ft. As to the question of gangways, he was convinced that they were necessary for so large a number of persons.

His Honour: People would not use the gangways if they were provided. They would climb over the seats if they could.

Cross-examined: If the builder did not do as the architect instructed, it was the duty of the latter to compel the builder by withholding his certificate, which was the only way of compelling a builder.

His Honour: But suppose the builder did not want a certificate, being hand in glove with the owner, as here?

Witness: Then he should withdraw from the job.

His Honour: But supposing he wants his fees and does not want to withdraw?

Witness: He is going to the limit of his power in withholding a certificate.

Continuing: From the plaintiff's plans it was very evident that he did not take into account the width of the road in front of the stand.

Re-examined: The alterations were a decided improvement on the plans.

Dr. Evan Jones said he saw Mr. Earl on the stand and had a conversation with him about the seats at the east end. He said "I suppose these seats are worth 2s. 6d. each." Upon which Mr. Earl put his hands up to his head and remarked, "I am worried to death; I have made a mistake." From the seats witness could only see the shops opposite.

Cross-examined: He had an interest in the stand at the time. He found 200*l.* of the money. The front of the tier he had referred to was cut down, and then he, sitting on one of the seats, could see the tops of the omnibuses. On a later date the plaintiff said he had not slept for a fortnight owing to the worry caused by his mistake.

Mr. George Hubbard, F.R.I.B.A. and F.S.A., of 85, Gresham-street, said he had prepared a plan on the basis of the plaintiff's plans and the ordnance survey, which showed that it would have been an impossibility for anybody to have got a view of the procession from the upper tier at the east end, except the persons in the two lowest rows of seats.

Cross-examined: He had taken the level of the road itself. Taking the view as 5 ft. above the surface of the roadway, even then those in the third and other back rows could not have seen the procession. He had not ascertained if the persons in the back rows could have seen the procession as it proceeded down Fleet-street, but certainly a few at the extreme east of the stand could have done so.

Mr. Fred Leach, foreman to Mr. Elkington, the builder, corroborated Mr. Elkington as to the alterations in the rake which were carried out after consultation with Mr. Earl, who was present every day. He never heard Mr. Earl complain of the alterations.

Mr. Thomas Brennan said he was in the employ of the defendant as a clerk in July. He remembered an interview between Mr. Earl and Mr. Pattenden, when the former asked if he could be of any assistance to the latter in his trouble with the seat-holders. Mr. Pattenden replied in the negative, and when, after making a request for a cheque, he was told that he had already been paid too much, Mr Earl practically agreed to waive his claim.

This concluded the defendants' case.

At the request of Mr. Warren the plaintiff was recalled, and emphatically denied that Dr. Jones ever called his attention to the absence of view from one of the tiers, or that he admitted to the doctor that he had made a mistake. He added that even after the evidence given that day he did not consider his plans were wrong.

His Honour, in giving judgment, said he could not help regretting to a very large extent the decision to which he was forced to come to in that case. When he heard the evidence on the first day it struck him that having regard to the way in which the site was sold by the parson, and to the fact that the plans had been prepared three months before on "spec," and the way in which Mr. Earl, who had no office in London, had been introduced, that he might not be an architect of great skill and repute, or that he was out of the running, as it were. But during his time at the Bar he (his Honour) had to deal with a great many builder's references and arbitrations, and knowing their ways he had taken the trouble, not only to look at the plaintiff's plans, but to read very carefully through the specifications, and to look at the drawings therein, and he had been forced to the conclusion that Mr. Earl was a gentleman who thoroughly understood his business, for the plans were well made, and the specifications were such as could only have been drawn by a competent architect. Having come to that conclusion in Mr. Earl's favour, he was, when he came to Court that day fully expecting to be able to find in his favour, and strongly too. Nor was he altogether impressed by two-thirds of the case made against him. It was true that he had made plans without any intersecting gangways, but every one knew that although a stand without gangways was not as convenient as one with them, on this occasion the desire was to get as many persons upon it as possible, the fear of a panic being a very slight one, seeing that it was a midsummer's day and the people would be on it only a few hours. Therefore he could not find any negligence on the plaintiff's part in not providing gangways. Another point made against the plaintiff was that in one block he provided for eight rows of seats, but only seven could be erected. That was because the builder was not satisfied with the distance allowed from back to back, and, therefore, in making that alteration the builder did it on his own authority, so that those points were in the plaintiff's favour. But when he came to hear the remainder of the plaintiff's case, it was clear that by some misfortune seats were provided in the second tier, and were so arranged that a view of the procession could not have been obtained by persons occupying them. That was a most serious defect in the plans, not merely because so many seats were lost by it, but because the seats were sold to persons in all parts of England, and if ever the persons had come to occupy them there would have been no end of trouble and law suits, which would have very seriously diminished the value of the stand. On that point he not only had the evidence of professional gentlemen like Mr. Hubbard and Mr. Goldsmith, but of Dr. Jones, who was interested in the speculation and actually tried the seats, and got the confession from Mr. Earl that he had made a mistake and was worried to death over it. Such evidence he could not disbelieve. But then there was the evidence of the builder and the builder's foreman, who, it was said, had made alterations in spite of the architect and his wishes, and in contempt of him, but they both agreed that they did not do anything except under the orders and instructions of Mr. Earl, and that they had no word of remonstrance from him about spoiling his plans. If that evidence was true, and he could not reject it, it was clear that the architect tried to remedy his fault, but did not succeed. It was absurd to suppose that a builder would do all that had been done out of his own head and without the architect having made a mistake. The plaintiff must have made a mistake, and therefore the question was, How much less than 200 guineas were the plans worth in consequence of that

mistake? He could not go into the number of seats that were of no use, for there were many points to be considered, seeing that the procession did not come off, and that the defendant returned money paid for seats, and therefore he thought the best thing he could do would be to say that the sum the plaintiff had received was sufficient. Therefore there must be judgment for the defendants on the claim. As to the counter-claim he would strike that out, but he would not go into the reasons for doing it.

Mr. Warren: I ask for costs on the counter-claim which has failed.

His Honour: No; I do not say for a moment that it has failed; but I think you have suffered enough and I have some feeling for your client in the matter. I am sorry for Mr. Earl, because I cannot understand how he came to make the unfortunate mistake, and I cannot hide the fact that he is an architect of very considerable merit.

Mr. Rose Innes: Does your Honour find that he is guilty of a breach of contract because we do not want him bringing an action for 5 per cent. of the profits?

His Honour: I do; breach of contract to provide you with plans that would make the stipulated number of seats.

Judgment was then entered for the defendants on the claim with costs, and the counter-claim was struck out by consent, which precludes further action upon it, and the case, which had occupied two whole days, was concluded.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

1,352 of 1902.—H. D. BARLOW: *Lifts and the Like.*

This consists of means for giving an approximately simple harmonic motion between two points of the part hauled, consisting of a motor driving a crank through reducing gear in combination with gear for multiplying the travel of the crank pin, whereby starting and stopping takes place gradually, and overrunning is rendered impossible.

1,355 of 1902.—T. E. DEVONSHIRE: *Construction of Underground Conduits more especially Intended for Use in Systems of Underground Electric Traction.*

An underground conduit formed in lengths each consisting of or comprising a cement, mortar, or concrete body part provided with flanges, or the equivalents, at the ends, and with perforated metal, or metal network, or "expanded metal" embedded in the said body part.

4,041 of 1902.—W. STEWART and W. E. FARRER: *Supporting Brackets for Cisterns, Shelves, Seats, and Similar Articles.*

A bracket with an adjustable top, which top may be adjusted to suit closet cisterns, shelves, or the like of varying widths.

4,042 of 1902.—W. STEWART and W. E. FARRER: *Automatic Flushing Tanks and Siphons.*

A flushing siphon or tank consisting of the dome and standpipe in one casting, with a pressure pipe passing down the inside of the standpipe to such a point as enables the whole of the contents of the tank or siphon-chamber to be discharged, and on the outside to a point regulated by the depth of water it is desired to withdraw from the tank or chamber into which the apparatus may be fixed.

7,156 of 1902.—J. A. KEMP: *Fastenings for Window-sashes and the Like.*

This consists in the combination with the laying rails of an upper and a lower sash of fastening members, comprising a solid block having a rib lying transversely of its slot and a spring tongue secured to the bottom of the slot at one side of the rib, said tongue being adapted to be bent over the rib and rearwardly of the slot thereabove, and having a latch shoulder, and a second block having a channel extending longitudinally thereto to receive the shoulder of the spring tongue, the bottom of the channel of the second block being slanted to engage and press the spring tongue rearwardly, whereby it may snap over the upper end of the second block.

7,230 of 1902.—G. LLOYD: *Means and Appliances for operating Flaps and Swing Doors, applicable to Refrigerating-rooms and Otherwise.*

An apparatus for operating flaps and swing doors, consisting of a bar the rotary movement of which imparts a simultaneous movement to the flap.

7413 of 1902.—W. ILLINGWORTH: *Machine or Apparatus for Pressing Pottery Ware.*

A machine or apparatus for use in pressing pottery ware, comprising a rocking frame mounted in bearings on a fixed support.

7541 of 1902.—J. H. PICKLES: *Bricks and Building Blocks.*

This invention relates to bricks for building purposes. A longitudinal tongue, rib, or projection is formed along the top of each brick and a corresponding rib or recess along the bottom, adapted to fit the rib or projection of the brick beneath. In walls of two or more bricks in thickness the "tie" or "cross" bricks are made with cross ribs and grooves.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

7,804 of 1902.—A. E. GEEKIE: *Air Inlet Valves for Ventilating Purposes.*

This invention relates to the manufacture of self-acting air inlet valves for the ventilation of drains, sewers, and the like, also adaptable for the rooms of dwelling-houses and workrooms. To apply this valve for drain purposes a casing preferably of cast iron is formed, of tubular syphon shape, one end of socket or spigot to fit into the usual stand pipe; and at the other inverted end, a loose seating of faced metal or other material is formed, upon which a disc valve of mica is fitted, oiled silk or other suitable material with a centre pin passing upward and downwards through and fixed to valve, and working centrally in guide holes or bridges.

7,880 of 1902.—H. J. MORTON (A. E. Murray): *Implement for Excavating Hard Earth, Soft Rock, or Such-like.*

A implement for excavating hard earth, soft rock, or such-like, consisting of a stem preferably straight and with a wide flat cutting edge at one end thereof.

8,711 of 1902.—P. TOWNEND: *Saws or Blades for Sawing or Cutting Stone and the Like.*

This relates to the production of saws or blades for sawing or cutting stone or the like by the employment of a gritty or granulated substance in conjunction therewith for performing the abrasion. In carrying this invention into effect, blades or saws are produced with a series of dished or hollowed recesses along both of their flat sides, said recesses being of such shape as to leave said blades thicker towards their edges and thinner at about their middle parts with portions between such recesses straight, or approximately so, to fortify or strengthen the blades.

9,450 of 1902.—P. L. MCCLELLAND: *Means to be Employed in Connexion with the Fixture of Knobs to their Spindles.*

This consists in the combination of the several parts constituting means of adjustably securing knobs to spindles, and comprising a spindle having a series of all-through holes, a knob having an all-through hole in its foot, an affixing pin adapted to be passed through coincident holes in the said knob foot and spindle, and a combined rose and keeper fitting having a solid or unpierced sleeve part adapted to be secured over the knob foot so as to prevent the affixing pin from rising out of its engaging position.

21,081 of 1902.—T. D. FALCONER: *Interlocking Transportable Hut or Building.*

A transportable building comprised of one or more units, each room being complete in itself, and having the adjacent edges of the sides protected by a metal junction, and the adjacent sections of the roof protected by the angle plates and provided with intervening water channels.

24,659 of 1902.—J. ROEBUCK: *Outlets for Sinks and the Like.*

Outlets for sinks and the like in which the periphery of the grating is embedded in the lead by casting.

25 550 of 1902.—E. BESELER: *Door Fasteners.*

A door fastener consisting of a hook and an engaging part, the length of which can be adjusted, and which can be fixed to the door-latch.

25 795 of 1902.—A. KULHANEK: *Flushing Apparatus for Water-closets, Urinals, and the Like.*

This consists of a chamber arranged in the flushing-pipe; a double tilting bucket eccentrically pivoted in said chamber, the double bucket consisting of the chief bucket and a secondary bucket, the latter provided with a small opening at its bottom, a fixed counterweight adapted to return the double bucket to its normal position after tilting; a tooth adapted to engage a butt on the bucket when the chief bucket is alone filled with water, which tooth can be pushed aside by a momentary pressure upon an external spring-controlled push piece, button, or like device.

27,146 of 1902.—B. A. BRIGGS and F. MATCHAM: *Construction of Theatres and other Places of Public Resort.*

This relates to the construction of the circles galleries, and like parts of theatres and like places of public resort, and consists in combination, a bowed girder made concentric or substantially so with the front rail of the circle theatre part, and with tangential ends, and a plurality of radiating girders crossing the bowed girder and secured thereto, and forming therewith an inner and outer spoked framework, the outer end of the girders of which are adapted to rest all so as to be supported by the theatre side and back walls, and to support the whole theatre part, without being loaded, and the inner end of the crossing girders of which are adapted to carrying the circle front railing.

27,639 of 1902.—A. J. BOULT (The Denney Galvanic Paint Co.): *Antifouling Paint for Coating Vessels and other Objects.*

An antifouling paint consisting of mercury, tallow, ochre, linseed oil drier, and red lead.

28,664 of 1902.—A. K. LOVELL: *Window Operating Devices.*

This invention relates to window operating devices, and it consists in a novel arrangement and construction of mechanism whereby a long line of windows are simultaneously opened and closed with but a slight expenditure of power. It also consists of operating rods adapted to be moved in opposite directions, collars adjustably mounted on said rods and swivelled links connecting said rods with the window sashes.

28,343 of 1902.—C. G. ARMSTRONG: *Process of Regulating Heating Systems and Apparatus therefor.*

The process of regulating heating systems, which consists in mixing a heating fluid and a displacing fluid, introducing this mixture into the heater, causing the displacing fluid to accumulate in such heater, and then withdrawing a portion of said displacing fluid when the temperature of the compartment to be heated falls below a predetermined point.

1,123 of 1903.—J. JACKSON: *Half Pipe Channel Junction.*

A half pipe channel junction, in which the main and junction channels are of different levels.

22,900 of 1901.—G. H. LLOYD: *Manufacture of Tanks and other Vessels.*

A system of constructing tanks and vessels from stamped unit plates.

4,479 of 1902.—T. BREAKELL: *Mortar and Muller for Grinding, Crushing, and Mixing Ores, Chemicals, and other Substances.*

A grinding or levigating machine comprising a rotary pan or mortar, a rotary pestle or muller eccentrically mounted therein, the diameter of the grinding surface of the muller being not less than half the diameter of the grinding surface of the pan, the muller being positively revolved and the mortar revolving by friction with the muller.

4,517 of 1902.—P. RUDOLPH and H. KASISKE: *Process for Preparing Wood or the Like for Painting or Ornamenting.*

A process for preparing wood or the like porous material for staining or painting purposes, consisting in cutting out the contours of the design on the wood or the like by means of a suitably-shaped instrument, inserting in the furrows thus formed a metal wire and then smoothing off the surface.

5,260 of 1902.—W. T. STAINTON: *The Application of Oxygen Gas for Ventilating Purposes.*

The ventilation of public and other buildings, ships, holds, mines, wells, and other confined places by the use of oxygen gas in conjunction with the existing ventilating apparatus, such as fan ducts, sprays, nozzles, water-troughs, and the like; also the warm-air chambers used in the heating and ventilating of buildings, &c., by adding a given quantity of the above gas according to circumstances to the air that is being introduced to the buildings, &c., after it (the air) has been screened and otherwise cleansed, the air and oxygen being admitted at the same pressures.

5,263 of 1902.—J. E. DOUGHTY: *A Portable Electric Light for Sanitary Engineers and others, for the Examination of Drains, Tubes, and Pipes.*

A portable electric light, consisting of an incandescent lamp attached to portable wires, for lighting up tubes, drains, chambers, and traps without the aid of lanterns, rods, or any mechanism. It may be worked off the house supply or from accumulators, by simply passing it into the mouth of the traps or chambers and flushing it down the drain to be surveyed or dropped down in the tube requiring an examination.

6,601 of 1902.—D. F. COOKSEY: *Bricks, Tiles, and Terra-cotta, and Apparatus for making the Same.*

A method of applying sand or other minute particles or matter to the surface of bricks and tiles, and other articles of clay terra-cotta, or other ceramic material, when in a plastic condition, by subjecting the surface to the action of a blast of air in which such substance is carried or conveyed.

6,770 of 1902.—T. W. TWYFORD: *Waste and Overflow Fittings for Baths, Lavatories, and Sinks, and the Like.*

A combination waste and overflow fitting for lavatories, baths, and the like, consisting of a hinged or jointed standpipe having an open or perforated upper end, and provided at the lower end with a valve ring or socketting foot, and a waste outlet or mouth or entrance socketed or having a seating corresponding to the valve ring of the standpipe, the said parts being so arranged that when the standpipe is in an erect or upright position with its valve foot taking into and closing the mouth of the waste outlet, the fitting serves as an overflow or standing waste; but when the said pipe is swung or turned over upon its joint the valve part is taken out of the said waste outlet, which is thereby closed.

7,742 of 1902.—T. FRANKE: *Beams and Girders for the Support of Ceilings.*

A closed, tubular girder or beam of triangular or trapezoidal cross, section rolled or drawn in one piece.

8,902 of 1902.—J. MERRILL: *Urinals.*

A urinal with a channel wider than the backs which are carried on bridges.

27,125 of 1902.—J. W. FERGUSON and G. W. FERGUSON: *Brick or Briquette-making Machines.*

This consists of moulds and partitions forced from a press-box by a ram and pitman, said pitman being pivotted to a crank, said crank loose upon the main driving shaft and rotating with the said shaft, said

clutch having a circumferential groove around it in which engages a fork, the arm of which has a rounded part thereon, said arm being pivoted to a pillar, and a clutch lever having a vertical recess beneath the same and engaging the said rounded portion on the arm.

MEETINGS.

FRIDAY, MARCH 20.

Architectural Association.—Mr. W. H. White on "Ancient and Modern Town Houses." 7.30 p.m.

Institution of Mechanical Engineers.—Mr. J. Rowan on "A Premium System Applied to Engineering Workshops." 8 p.m.

Birmingham Architectural Association.—Mr. Harold Baker on "A Sketch of the History of English Architecture."

SATURDAY, MARCH 21.

Royal Institution.—Right Hon. Lord Rayleigh on "Light: its Origin and Nature." IV. 3 p.m.

Architectural Association.—Fourth Spring Visit.

MONDAY, MARCH 23.

Society of Arts (Cantor Lectures). — Prof. J. A. Fleming, M.A., D.Sc., F.R.S., on "Hertzian Wave Telegraphy in Theory and Practice."—IV. 8 p.m.

Surveyors' Institution.—Mr. J. L. Crouch on "The Rating of Brickfields." 8 p.m.

Junior Institution of Engineers.—Visit to the Dalston works of Messrs. Shannon, Ltd. 4.30 p.m.

TUESDAY, MARCH 24.

Royal Institution.—Sir Robert Ball, M.A., F.R.S., on "Great Problems in Astronomy."—II. 3 p.m.

Manchester Society of Architects (Students' Meeting).—Mr. J. H. Somerset on "Ancient Roman Construction."

Institution of Civil Engineers.—Mr. Amyas Morse on "The Protection Works of the Kaiser-i-Hind Bridge over the River Sutlej, near Ferozepur." 8 p.m.

WEDNESDAY, MARCH 25.

Society of Arts.—Mr. Arthur Kitson on "Oil Light by Incandescence." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Quarterly meeting of the Directors. 8 p.m.

Dover Institute.—Mr. E. H. Montauban on "Lighthouses." Illustrated. 8 p m.

Edinburgh Architectural Association.—Mr. A. Hunter Crawford on "The Building of a House." Illustrated.—IV. 8 p.m.

THURSDAY, MARCH 26.

Leeds and Yorkshire Architectural Society.—(1) Mr. R. P. Oglesby on "Sir John Vanbrugh, Dramatist and Architect;" (2) Election of officers; (3) Exhibition of R.I.B.A. prize drawings. 6.30 p.m.

Institution of Electrical Engineers.—(1) "Distribution Losses in Electric Supply Systems," by Mr. A. D. Constable and Mr. E. Fawssett. (2) An abstract of a Paper by Mr. M. B. Field, "A Study of the Phenomenon of Resonance in Electric Circuits by the Aid of Oscillograms." (3, if time permit), "Divided Multiple Switchboards: an Efficient Telephone System for the World's Capitals," by Mr. W. Aitken. 8 p.m.

FRIDAY, MARCH 27.

Incorporated Association of Municipal and County Engineers.—Meeting in London (Westminster Palace Hotel), Mr. J. Patten Barber to open a discussion on "Wooden Structures and the Powers of Metropolitan Borough Councils with respect thereto." 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. J. G. Y. D. Morgan on "The Advantages of Motor-Driven Printing Machines." 8. p.m.

Institute of Sanitary Engineers, Ltd. — Examination in Practical Sanitary Science.

Birmingham Architectural Association.—Mr. C. Silk on "The B.A.A. excursion to Banbury," illustrated by Mr. T. Cooper, A.R.I.B.A., and Mr. J. Ward.

SATURDAY, MARCH 28.

Royal Institution. — Rt. Hon. Lord Rayleigh on "Light; its Origin and Nature."—V. 3 p.m.

Institute of Sanitary Engineers, Ltd.—Examination in Practical Sanitary Science.

Edinburgh Architectural Association.—Visit to Darn Hall.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 2.—By DYER, SON, & HILTON (at Lee Green).

Lee.—Old-rd., The Institute, with land in rear, f., p. £1,040
37A, 37B, and 37C, Summerfield-st., u.t. 66 yrs., g.r. 10*l.* 10s., w.r. 54*l.* 12s. 295

March 4.—By W. HARRY REES & SON (at Neath).

Graig Trebanos, Glamorgan.—Tynypant Farm, 38 a. 3 r. 8 p., f., y.r. 38*l.* 1,300
Gelly Trebanos, house and 4 a. 3 r. 37 p., f., y.r. 9*l.* 300
Freehold house and 2 a. 1 r. 10 p, y.r. 4*l.* 10s. .. 240
Two freehold cottages and 0 a. 3 r. 7 p., y.r. 7*l.* 230
Banwen Meadow, 4 a., f., y.r., 3*l.* 10s. 205
(All the foregoing lots include mines and minerals.)
Four freehold fields, 5 a. 0 r. 33 p., y.r. 4*l.* 313
Melincrythan, Glamorgan.—53 and 54, Caehir-villas, f., y.r. 32*l.* 10s. 400

March 6.—By HUSSEY & SON (at Exeter).

Tipton St. John, Devon.—Lower Coombe Farm, 90 a. 0 r. 9 p., f., p. 2,600
Various enclosures of land, 17 a. 3 r. 19 p., f. .. 449
Three freehold building sites, 13 a. 1 r. 18 p. .. 642
Two freehold cottages and orchard, 3 r. 10 p. .. 182

March 7.—By JOHN WILLSON & SONS (at Horncastle).

Tetford, Lincs.—A freehold estate, comprising 75 a. 1 r. 33 p., p. 1,625

March 9.—By ALDRIDGE & LEVER.

Camden Town.—116, 118, 120, and 124, Bayham-st., y.r. 224*l.*; also i.g.r.'s 21*l.* u.t. 2½ yrs., g.r. 6*l.* 5s. 630
120 and 122, King's-rd., u.t. 20 yrs., g.r. 2*l.*, y.r. 80*l.* £770
114, King's-rd., u.t. 20 yrs., g.r. 1*l.* 10s., y.r. 40*l.* 330
3, Wilmot-pl., u.t. 20 yrs., g.r. 1*l.* 10s., y.r. 50*l.* 420

By BEARD & SON.

Holborn.—6, Furnival-st., area 2,090 ft., f., y.r. 140*l.* 4,000
Kilburn.—108, Canterbury-rd., u.t. 56 yrs., g.r. 6*l.* 10s., w.r. 55*l.* 12s. 355
Gillingham, Kent.—29, Stafford-st., f., y.r. 32*l.* .. 480

By G. HEAD & CO.

Edgware-rd.—60, Bell-st. (S), f., e.r. 35*l.* 600
St. John's Wood.—55, St. John's Wood-ter., u.t. 16¾ yrs., g.r. 4*l.* 10s., e.r. 55*l.* 205

By KEMSLEYS.

Stepney.—328, Oxford-st., f., w.r. 63*l.* 14s. 700
68, Bedford-st. (S), f., y.r. 40*l.* 775
70, 72, and 74, Bedford-st., f., w.r. 157*l.* 6s..... 2,000
63, Ben Jonson-rd. (S), u.t. 80¼ yrs., g.r. 7*l.*, y.r. 30*l.* 320
65 to 75 (odd), Ben Jonson-rd., u.t. 80¼ yrs., g.r. 36*l.*, w.r. 234*l.* 1,810
77, 79, and 81, Ben Jonson-rd. (S), u.t. 80¼ yrs., g.r. 22*l.*, y.r. 118*l.* 1,480
Leytonstone.—239, Leytonstone-rd., u.t. 43½ yrs., g.r. 10*l.*, y.r. 40*l.* 300
Camberwell.—180 and 182, Grosvenor-ter., u.t. 13¾ yrs., g.r. 5*l.*, y.r. 75*l.* 450
Bromley-by-Bow.—Hope-ter., a freehold building site, p. 135
East Ham.—Roman-rd., a block of freehold building land, 11 a. 0 r. 5 p. 3,000

By JONES, LANG, & CO.

City of London.—5, Creechurch-la. (warehouse), u.t. 19¼ yrs., g.r. 55*l.*, e r. 450*l.* 1,500
Cheapside and Paternoster-row, building lease of corner site, area 945 ft., let at per annum.. 1,150
Newgate-st. and Panyer-alley, building lease of corner site, area 1,200 ft., let at per annum .. 920

By WEATHERALL & GREEN.

Twickenham.—London-rd., the Black Dog p.-h., and shop adjoining, f., with goodwill, p. 5,200
Stanley-rd., the Nelson Inn, f., with goodwill, p. 7,200
Enfield.—Byculiah-rd., Ravenswood, f., y.r. 62*l.* 875

March 10.—By REYNOLDS & EASON.

Streatham.—Palace-rd., &c., corner block of building land, area 2 a. 2 r. 20 p., f. 2,450
Battersea.—34, Cabul-rd., u.t. 74¾ yrs., g.r. 6*l.*, y.r. 36*l.* 350

By J. S. RICHARDSON.

Willesden.—12, Connaught-rd., u.t. 74½ yrs., g.r. 8*l.*, e.r. 50*l.* 420

By ROGERS, CHAPMAN, & THOMAS.

Spitalfields.—22, Fournier-st. (S), f., y.r. 100*l.*.... 1,950
Pimlico.—70, Warwick-st., u.t. 20½ yrs., g.r. 9*l.*, p. 440

By J. F. STONEHEWER.

Bermondsey.—17 and 19, Maltby-st., f., w.r. 59*l.* 16s. 700
Peckham.—Blake's-rd., f.g.r. 12*l.*, reversion in 42 yrs. 310
Atwell-rd., f.g. rents 30*l.* 10s., reversion in 48 yrs. 905
Camberwell.—68 and 70, Talfourd-rd., f., y.r. 85*l.* 1,400
Brockley.—Breakspears-rd., i.g.r. 8*l.*, u.t. 73 yrs., g.r. 1*l.* 165

By FRED VARLEY & SON.

Camden Town.—22, Leybourne-rd. (S), u.t. 26¾ yrs., g.r. 7*l.*, y.r. 60*l.* 475
Finsbury Park.—18, Somerfield-rd., u.t. 64 yrs., g.r. 8*l.* 8s., y.r. 48*l.* 450

By WESTON & SONS.

Holloway.—14, Ashburton-gr., u.t. 37 yrs., g.r. 3*l.* 17s. 6d., y.r. 31*l.* 4s. 220
Brixton.—Grove-rd., Altona Lodge, u.t. 31 yrs., g.r. 4*l.*, e.r. 80*l.* 550

By E. PENNINGTON (at Richmond).

Twickenham. — Sandycombe-rd., Sandycombe Lodge, f., p. 855
Isleworth.—St. Margaret's-rd., St. Cyres and St. Albans, f., e.r. 72*l.* 925

By HUMBERT & FLINT (at Watford).

Bushey Heath, Herts.—The Ruts, The Retreat, and 1 a. 0 r. 2 p., f., p. 830

March 11.—By W. A. BLAKEMORE.

Portman-square.—8, Seymour-st., u.t. 16 yrs., g.r. 20*l.*, y.r. 180*l.* 1 560
South Kensington.—7, Cathcart-rd., f., e.r. 65*l.*.. 900

By H. J. BROMLEY.

Norwood.—71, 73, 75, 79, 81, 83, and 85, Thornlaw-rd., f., y.r. 194*l.* 2,890
29, 31, 35, 37, 39, and 45, Thornlaw-rd., u.t. 78 yrs., g.r. 58*l.* 14s.. y.r. 287*l.* 2,565
Beulah Hill, Grecian Villa and 3 a. 2 r. 26 p., f., p. 8,000
Beulah Hill, Meadow, orchard and garden land, area 11 a. 2 r. 9 p. f., p. 6,500
Beulah Hill, f.g.r. 12*l.* 10s., reversion in 9¾ yrs. 800
Grecian Cottages, f g.r. 6*l.* 5s., reversion in 9¾ yrs. 400
Crown Hill, Beulah Lodge, f., y.r. 50*l.* 700
178 and 180, Beulah-hill, f., y.r. 90*l.* 1,250
141, Beulah-hill, f., y.r. 100*l.* 1,600

By J. G. DEAN & CO.

Balham.—27, Tunley-rd., u.t. 93 yrs., g.r. 10*l.*, e.r. 65*l.* 775

By GLASIER & SONS.

Dulwich.—Ashbourne-gr., i.g.r.'s 60*l.*, u.t. 67 yrs., g.r. nil 1,240
Hammersmith.—The Gr., The Grove Tavern, f.g.r. 50*l.*, reversion in 64 yrs. 1,950
Walworth.—231, Walworth-rd. (S), f., y.r. 80*l.* .. 1,100

By GRAVES & SON.

Westbourne Park.—11, Cornwall-rd., u.t. 56 yrs., g.r. 9*l.*, y.r. 52*l.* 10s. 450

By HAROLD GRIFFIN.

Battersea.—31 and 35, Surrey-ln., u.t. 79½ yrs., g.r. 12*l.*, y.r. 76*l.* 600
Pimlico.—91, Tachbrook-st., u.t. 26 yrs., g.r. 8*l.*, y.r. 57*l.* 10s. 425

By MORETON RICHES.

Tooting.—159 and 161, Trevelyan-rd., u.t. 90 yrs., g.r. 12*l.* 12s., w.r. 68*l.* 18s. 450
Camberwell.—39, Parkhouse-st., area 11,200 ft., f., y.r. 77*l.* 10s. 1,100
Battersea.—17, Severus-rd., u.t. 81 yrs, g.r. 8*l.* 8s., w.r. 65*l.* 400

March 12.—By BEALE & CAPPS.

Shepherd's Bush.—145, Uxbridge-rd., u.t. 61 yrs., g.r. 7*l.*, e.r. 55*l.* £530
Notting Hill.—234, Ladbroke-gr., u.t. 67 yrs., g.r. 10*l.*, y.r. 80*l.* 500
Woodford.—Chelmsford-rd., Chepstow Lodge, f., y.r. 45*l.* 760

By BISLEY & SONS.

Walworth.—59, Barlow-st., u.t. 37 yrs., g.r. 5*l.*, w.r. 33*l.* 16s. 230

By FAREBROTHER, ELLIS & CO.

Hornsey Rise.—West View, f.g.r. 12*l.* 12s., reversion in 79½ yrs. 325
Holloway.—Benwell-rd., f.g.r.'s 72*l.*, reversion in 30¾ yrs. 2,045
Queensland-rd., f.g.r.'s 28*l.* 8s., reversion in 36 yrs. 720
Streatham.—62, Streatham Hill, area ¾ of an acre, u.t. 19¼ yrs., g.r. 25*l.*, y.r. 100*l.* 450
Clapham.—65 and 67, Larkhall-lane (S.), and 95, Paradise-rd. (S.), u.t. 38¼ yrs., g.r. 17*l.*, y.r. 170*l.* 18s. 750

By MATTHEWS, MATTHEWS & GOODMAN.

Tottenham.—2 to 18 (even), Avondale-rd., u.t. 85 yrs., g.r. 40*l.* 10s., w.r. 260*l.* 1,575

By C. C. & T. MOORE.

Mile End.—25 and 26, Beaumont-sq., u.t. 25 yrs., g.r. 9*l.* 0s. 10d., q.r. 78*l.* 670
Clapton.—91, Rendlesham-rd., f., y.r. 34*l.* 580
93, Rendlesham-rd. (S), f., y.r. 75*l.* 1,800
117, Rendlesham-rd. (S.) f., e.r. 36*l.* 445
Mile End.—147 and 149, Globe-rd., and 1 and 2, Foskett's-bldgs., f., y.r. 87*l.* 4s. 935
65, 68, and 70, Cleveland-st., u.t. 27¼ yrs., g.r. nil, w.r. 85*l.* 16s. 500
7, Cephas-st., u.t. 27¼ yrs., g.r. 3*l.* 3s., y.r. 25*l.* 4s. 235
Limehouse.—4, 6, and 8, Gill-st., f., y.r. 75*l.* 4s... 880
Stoke Newington.—68, Manor-rd., u.t. 71¾ yrs., g.r. 9*l.*, y.r. 50*l.* 535
Plaistow.—89 to 97 (odd), Trinity-st., u.t. 62 yrs., g.r. 17*l.* 10s., w.r. 124*l.* 16s. 570

By WM. STEVENS.

Hoxton.—49 and 50, Shaftesbury-st., u.t. 32½ yrs., g.r. 31*l.*, y.r. 58*l.* 215
Islington.—127, Balls Pond-rd., f., w.r. 57*l.* 4s. .. 580
Dalston.—9, Colvestone-cres., u.t. 53 yrs., g.r. 7*l.*, e.r. 46*l.* 445

By W. HALLETT & CO.

Paddington.—30, Formosa-st., u.t. 63½ yrs., g.r. 9*l.*, e.r. 60*l.* 580
16, Blomfield-st., u.t. 39½ yrs., g.r. 7*l.* 7s., e.r. 60*l.* 430
Holloway.—42, St. John's-villas, u.t. 72 yrs., g.r. 5*l.* 5s., y.r. 45*l.* 450
Peckham.—17, Muschamp-rd., u.t. 73 yrs., g.r. 5*l.* 10s., y.r. 32*l.* 335

By NEWBON, EDWARDS, & SHEPHARD.

Hackney.—67, Temple-st., f., w.r. 46*l.* 16s..... 535
Bethnal Green.—51, Moss-st. (Site), f., p. 435
Dalston.—17, Middleton-rd., f., y.r. 38*l.* 595
63, Holly-st., u.t. 64 yrs., g.r. 3*l.* 10s., w.r. 54*l.* 12s. 105
Holloway.—53 and 54, Loraine-rd., f., e.r. 110*l.*.. 1,870
11, Queensland-rd., u.t. 30¾ yrs., g.r, 6*l.*, y.r. 40*l.* 6s. 145
650 and 652, Holloway-rd., f., y.r. 120*l.* 1,850
13 and 15, St. John's-villas, u.t. 45 yrs., g.r. 13*l.*, y.r. 90*l.* 740
Hornsey Rise.—Nos. 10 and 12, u.t. 48 yrs., g.r. 10*l.*, y.r. 110*l.* 780
Barnsbury. — Westbourne-rd., The Middlesex Tavern, i.g.r. 105*l.*, u.t. 56 yrs., g.r. 66*l.*, with reversion 800
49, Thornhill-sq., u.t. 42½ yrs., g.r. 7*l.*, e.r. 50*l.* 475
88, Hemingford-rd., u.t. 39½ yrs., g.r. 10*l.*, e.r. 50*l.* 420
Islington.—70, 72, and 74, Queen's Head-st., u.t. 33½ yrs., g.r. 10*l.* 10s., y.r. 108*l.* 875
Highgate.—30 and 32, Raydon-st., u.t. 61¼ yrs., g.r. 10*l.* 10s., q.r. 69*l.* 12s. 470
De Beauvoir Town.—56, Downham-rd., u.t. 14 yrs., g.r 4*l.* 10s., e.r. 50*l.* 495
Muswell Hill.—Barnard Hill, Arundel House, f., y.r. 40*l.* 675

By STIMSON & SONS.

Mile End.—24, Clinton-rd., f., y.r. 27*l.* 6s. 420
Limehouse.—14 and 16, Repton-st., c., w.r. 46*l.*.. 505
Poplar.—391, East India Dock-rd., u.t. 70½ yrs., g.r. 6*l.* 6s., y.r. 33*l.* 350
10 and 62, Woolmore-st., f., w.r. 40*l.* 6s. 370
Blackwall.—32 and 34, Coldharbour, f., w.r. 33*l.* 16s. 275
Stratford.—60 to 74 (even), Barnby-st, u.t. 67 yrs., g.r. 28*l.*, w.r. 166*l.* 8s. 980
Walthamstow.—8, 10, and 12, Buxton-rd. (S.), u.t. 77 yrs., g.r. 18*l.*, y.r. 88*l.* 630
East Ham.—28 to 36 (even), Gilleth-av., u.t. 96 yrs., g.r. 20*l.*, w.r. 123*l.* 10s. 700
New Cross.—10 and 12, Barlborough-st., u.t. 72½ yrs., g.r. 10*l.*, w.r. 68*l.* 18s. 620
Brockley.—13 and 15, Arabin-rd., u.t. 71 yrs., g.r. 10*l.*, y.r. 56*l.* 560
Kingston, Surrey.—2, East-rd., u.t. 76 yrs., g r. nil, y.r. 24*l.* 370
1, 2 and 5, Acre-rd., u t. 76 yrs., g.r. nil, w.r. 66*l.* 6s. 620
Balham.—286 and 288, Balham High-rd., y.r. 160*l.*; also i.g.r. 6*l.* u.t. 52 yrs., g.r. 30*l.* 1,770
Deptford.—6, New King-st. (S.), f. e.r. 50*l.* 300
Blackfriars.—78, Blackfriars-rd., with workshop and stabling, u.t. 23 yrs., g.r. 17*l.*, y.r. 132*l.* 10s. 690
Old Kent-rd.—17, Coopers-rd., u.t. 11½ yrs., g.r. 3*l.* 4s., w.r. 36*l.* 8s. 125

March 13.—By DRYSDALE, NURSE & CO.

Stoke Newington —41, Osbaldeston-rd., u.t. 75¼ yrs., g.r. 8*l.* 8s., e.r. 55*l.* 580

By BREADMORE & WEBB.

Kew, Surrey.—280, Kew-rd., u.t. 68 yrs., g.r. 40*l.*, 10s., e.r. 140*l.* 1,410
Bermondsey.—29, Riley-st. (S.). f., w.r. 35*l.* 2s... 415

By W. B. HALLETT.

Holloway.—49, St. John's-villas, f., e.r. 55*l.* 960
45, George's-rd., f., w.r. 19*l.* 10s..... 150
9 and 10, Hope-st., f., w.r. 35*l.* 2s. 900
201, Holloway-rd. (S.), u.t. 31 yrs., g.r. nil, y.r. 65*l.* 1,040
64 and 68, Parkhurst-rd., u.t. 28 yrs., g.r. 16*l.*, y.r. 96*l.* 795
14 and 15, Williamson-st., u.t. 42½ yrs., g.r. 10*l.*, y.r. 66*l.* 665
Hackney.—9, Lauriston-rd. (S), f., y.r. 30*l.* 535

Stoke Newington.—64, King Henry's-walk (S.), u.t. 19¼ yrs., g.r. 8*l.*, y.r. 38*l.* £255
By FERRIS & PUCKRIDGE.

Kenley, Surrey.—Hayes-ln., Sunnyside, and 1 a., f., p. 1,450

Notting Hill.—4, Crescent-st. (S.), f., y.r. 20*l.* ... 200
By TYLER & Co.

Brompton.—South-st., i.g.r. 40*l.*, u.t. 22 yrs., g.r. 12*l.* 415
By A. W. TYRRELL.

Nateley, Hants.—Newnham-rd., an enclosure of freehold meadow land, 4 a. 1 r. 0 p. 120

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 14 0	per 1,000 alongside, in river.
Rough Stocks and Grizzles.....	1 11 0	,, ,, ,,
Facing Stocks....	2 12 0	,, ,, ,,
Shippers	2 5 0	,, ,, ,,
Flettons	1 7 6	,, at railway depôt
Red Wire Cuts ..	1 12 0	,, ,, ,,
Best Fareham Red	3 12 0	,, ,, ,,
Best Red Pressed Ruabon Facing	5 0 0	,, ,, ,,
Best Blue Pressed Staffordshire ..	4 5 0	,, ,, ,,
Do. Bullnose	4 11 0	,, ,, ,,
Best Stourbridge Fire Bricks	4 8 0	,, ,, ,,
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers.....	13 0 0	,, ,, ,,
Headers	12 0 0	,, ,, ,,
Queins, Bullnose, and Flats.....	17 0 0	,, ,, ,,
Double Stretchers	19 0 0	,, ,, ,,
Double Headers..	16 0 0	,, ,, ,,
One Side and two Ends.....	19 0 0	,, ,, ,,
Two Sides and one End	20 0 0	,, ,, ,,
Splays, Chamfered, Squints	20 0 0	,, ,, ,,
Best Dipped Salt Glazed Stretchers and Headers	12 0 0	,, ,, ,,
Quoins, Bullnose, and Flats.....	14 0 0	,, ,, ,,
Double Stretchers	15 0 0	,, ,, ,,
Double Headers..	14 0 0	,, ,, ,,
One Side and two Ends.....	15 0 0	,, ,, ,,
Two Sides and one End	15 0 0	,, ,, ,,
Splays Chamfered, Squints.....	14 0 0	,, ,, ,,
Second Quality White and Dipped Salt Glazed	2 0 0	,, less than best.
Thames and Pit Sand	7	0 per yard, delivered.
Thames Ballast	6	0 ,, ,,
Best Portland Cement	30	0 per ton, delivered.
Best Ground Blue Lias Lime..	21	0 ,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 10s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.
Bath ,, ...	1 7	,, ,,
Farleigh Down Bath ..	1 8	,, ,,
Beer in blocks	1 6	,, ,,
Grinshill ,, ...	1 10	,, ,,
Brown Portland in blocks	2 2	,, ,,
Darley Dale in blocks..	2 4	,, ,,
Red Corsehill ,,	2 5	,, ,,
Closeburn Red Freestone	2 0	,, ,,
Red Mansfield ,,	2 4	,, ,,

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. depôt.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. ,,
6 in. Rubbed two sides Ditto, Ditto	2 6	,, ,,
3 in. Sawn two sides slabs (random sizes)..	0 11½	,, ,,
2 in. to 2½ in. Sawn one side slabs (random sizes)	0 7½	,, ,,
1½ in. to 2 in. ditto, ditto	0 6	,, ,,
BEST HARL YORK—		
Scappled random blocks	3 0	per ft. cube ,,
6 in. sawn two sides, landings to sizes (under 40 ft. sup.)	2 8	per ft. super. ,,
6 in. Rubbed two sides Ditto	—	,, ,,
3 in. sawn two sides slabs (random sizes)	1 2	,, ,,

PRICES CURRENT (*Continued*).

STONE.

	s. d.	
2 in. self-faced random flags.....	0 5	per ft. super dlvd. rwy. depot.
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube.
,, ,, ,, 6 in. sawn both sides landings	2 7	deld. rly. depôt. per ft. super. deld. rly. depôt.
,, ,, ,, 3 in. do.	1 2½	,, ,,

SLATES.

in. in.	£ s. d.	
20×10 best blue Bangor..	13 2 6	per 1000 of 1200 at ry.dep.
20×12 ,, ,, ,, ..	13 17 6	,, ,,
20×10 best seconds ,,	12 15 0	,, ,,
20×12 ,, ,, ,,	13 10 0	,, ,,
16×8 best ,,	7 0 0	,, ,,
20×10 best blue Portmadoc ..	12 5 0	,, ,,
16×8 best blue Portmadoc	6 0 0	,, ,,
20×10 best Eureka unfading green....	15 0 0	,, ,,
20×12 ,, ,,	16 10 0	,, ,,
18×10 ,, ,,	11 10 0	,, ,,
16×8 ,, ,,	8 7 6	,, ,,
20×10 permanent green	10 10 0	,, ,,
18×10 ,, ,,	9 0 0	,, ,,
16×8 ,, ,,	6 5 0	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles..	42 0	per 1,000, at rly. depôt.
Hip and valley tiles....	3 7	per doz. ,, ,,
Best Broseley tiles	50 0	per 1,000 ,, ,,
Do. Ornamental Tiles	52 6	,, ,,
Hip and valley tiles....	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles.....	3 0	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	51 9	per 1,000 ,, ,,
Do. Ornamental Do.	54 6	,, ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles.....	3 8	,, ,, ,,
Best "Rosemary" brand plain tiles	48 0	per 1,000 ,, ,,
Do. Ornamental Do.	50 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3 8	,, ,, ,,

WOOD.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in and 11 in.....	15 10 0	16 10 0
Deals: best 3 by 9.....	14 10 0	15 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.....	11 10 0	12 10 0
Battens: best 2½ by 6 and 3 by 6 ..	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	,, ,, ,,
2 in. by 4 in. and 2 in. by 6 in. ..	9 0 0	9 10 0
2 in. by 4½ in. and 2 in. by 5 in. ..	8 10 0	9 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	,,
Fir timber: Best middling Danzig or Memel (average specification	At per load of 50 ft. 4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in)	3 12 6	3 15 0
Small timber (6 in. to 8 in.).....	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)..	3 5 0	3 15 0
JOINERS WOOD.	At per standard.	
White Sea: First yellow deals, 3 in. by 11 in.....	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
,, ,, 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.....	18 0 0	19 10 0
Battens.....	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.....	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens.....	11 10 0	12 10 0
Third yellow deals, 3 in. by 11 in.....	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:— First white deals, 3 in. by 11 in.	14 10 0	15 10 0
,, ,, 3 in. by 9 in.	13 10 0	14 10 0
Battens.....	11 0 0	12 0 0
Second white deals 3 in. by 11 in.	13 10 0	14 10 0
,, ,, ,, 3 in. by 9 in.	12 10 0	13 10 0
,, ,, ,, battens.....	9 10 0	10 10 0
Pitch-pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes ..	33 0 0	upwards.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube..	0 3 6	0 4 6
Danzig and Stettin Oak Logs— Large, per ft. cube	0 2 6	0 3 6
Small ,, ,, ...	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube ..	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¾ in. do. do.	0 0 6½	- - -
Dry Mahogany— Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 10 0	20 0 0
American Whitewood Planks— Per ft. cube	0 4 0	- - -

PRICES CURRENT (*Continued*).

WOOD.

Prepared Flooring—	Per square. £ s. d.	£ s. d.
1 in. by 7 in. yellow, planed and shot.....	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched.....	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched.....	0 16 0	1 1
1 in. by 7 in. white, planed and shot.....	0 11 6	0 13 6
1 in. by 7 in. white, planed and matched.....	0 12 0	0 14 0
1¼ in. by 7 in. white, planed and matched.....	0 14 6	0 16 6
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0 11 0	0 13 6
1 in. by 7 in. do. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders ,, ,,	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Flitch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6	8 5 6

METALS.

	Per ton, in London £ s. d.	£ s. d.
IRON—		
Common Bars.....	7 15 0	8 5 0
Staffordshire Crown Bars, good merchant quality	8 5 0	8 15 0
Staffordshire "Marked Bars" ..	10 10 0	- - -
Mild Steel Bars	9 0 0	9 10 0
Hoop Iron, basis price.....	9 5 0	9 10 0
,, ,, galvanised.....	16 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.— Ordinary sizes to 20 g.	10 0 0	- - -
,, ,, to 24 g.	11 0 0	- - -
,, ,, to 26 g.	12 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes 6 ft. by 2 ft. to 3 ft. to 20 g.....	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.....	14 5 0	- - -
Sheet Iron, Galvanised, flat, best quality:— Ordinary sizes to 20 g.....	16 0 0	- - -
,, ,, 22 g. and 24 g.	16 10 0	- - -
,, ,, 26 g.....	18 0 0	- - -
Galvanised Corrugated Sheets:— Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.....	14 5 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker ..	12 0 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.	14 5 0	- - -
Cut nails, 3 in. to 6 in.	9 5 0	9 15 0

(Under 3 in. usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
*LEAD—Sheet, English, 3 lbs. & up.	16 7 6	- - -
Pipe in coils	16 17 6	- - -
Soil pipe	19 7 6	- - -
Compo Pipe	19 7 6	- - -
ZINC—Sheet— Vieille Montagne ..... ton	27 2 6	- - -
Silesian ..... ,,	27 0 0	- - -
COPPER— Strong Sheet ..... per lb.	0 0 10½	- - -
Thin ..... ,,	0 0 11½	- - -
Copper nails ..... ,,	0 0 11½	- - -
BRASS— Strong Sheet..... ,,	0 0 10	- - -
Thin ,, ... ,	0 0 11	- - -
TIN—English Ingots ..... ,,	0 1 5	- - -
SOLDER—Plumbers' ..... ,,	0 0 6½	- - -
Tinmen's ..... ,,	0 0 8½	- - -
Blowpipe ..... ,,	0 0 9½	- - -

* Our quotation for sheet lead last week should have been £16 5s. The correction reached us too late for insertion.

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d.	per ft. delivered.
,, fourths.....	1½d.	,, ,,
21 oz. thirds	3½d.	,, ,,
,, fourths.....	2½d.	,, ,,
26 oz. thirds	4d.	,, ,,
,, fourths.....	3½d.	,, ,,
32 oz. thirds	5d.	,, ,,
,, fourths.....	4½d.	,, ,,
Fluted sheet, 15 oz.	3d.	,, ,,
,, 21 oz.	4d.	,, ,,
½ Hartley's Rolled Plate	1½d.	,, ,,
⅝ ,, ,, ,, ...	2d.	,, ,,
½ ,, ,, ,, ...	2½d.	,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels..	per gallon	0 2 3
,, ,, ,, in drums.....	,,	0 2 7
Boiled ,, ,, in pipes or barrels..	,,	0 2 5
,, ,, ,, in drums.....	,,	0 2 9
Turpentine, in barrels	,,	0 3 8
,, in drums	,,	0 3 10
Genuine Ground English White Lead	per ton	21 10 0
Red Lead, Dry	,,	20 0 0
Best Linseed Oil Putty.....	per cwt.	0 8 0
Stockholm Tar.....	per barrel	1 12 0

[*See also page* 323.

CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
Additions to Schools	Alva (N.B.) School Board	Kerr & M'Culloch, Architects, 30, Mar-street, Alloa	Mar. 24
Rebuilding the Star Inn, North Burton	Trustees of the late Mr. Kirk	D. Petch, Architect, Huntriss-row, Scarborough	do.
Warehouse, Strathmill Distillery, Keith	.....	C. C. Doig, Architect, Elgin	do.
Shelters on Esplanade	New Hunstanton U.D.C.	L. F. Eagleton, Architect, King-street, King's Lynn	do.
Additions to Cattle Market, Woodbridge-road	Guildford Town Council	C. G. Mason, Civil Engineer, Tuns Gate, Guildford	do.
Additions to Houses, Taylor-street, Chathill	.....	J. Ewing, Sea Houses, Chathill	do.
Granite Road Metal (890 tons)	Gretton R.D.C.	J. Fowler, Council Offices, Uppingham	do.
Granite Road Metal (3,500 tons), Uppingham, Rutland	Uppingham R.D.C.	do.	do.
Retaining Wall, London-road	Manchester Corporation	City Surveyor, Town Hall, Manchester	do.
Additions to Hospital, Patricroft, Lancs	Barton-upon-Irwell Guardians	T. Worthington & Co., Architects, Union Offices, Patricroft	do.
Farmhouse, Crowcombe, Taunton	Mr. Thos. Starkey	G. C. Strawbridge, Architect, 25, Alma-street, Taunton	do.
Reconstructing Clayton-lane Bridge	Manchester Corporation	City Surveyor, Town Hall, Manchester	do.
Surveyor's Materials, &c.	Brownhill (Staffs) U.D.C.	W. B. Chancellor, Surveyor, Public Buildings, Brownhills	do.
Water Supply Works, &c.	Witham (Essex) U.D.C.	F. S. Courtney, Civil Engineer, 25, Victoria-street, S.W.	do.
*Roadmaking & Paving Ladysmith, Crediton, &c. Roads	Willesden District Council	Engineer to the Council, Public Offices, Dyne-road, Kilburn, N.W.	do.
Chapel, School, &c., Didcot	.....	Rev. G. Gill, Wantage	Mar. 25
Alterations, St. Joseph's School, Cockermouth	.....	J. Howes, Architect, Workington	do.
Conveniences, Brownhill, Birstall, Yorks	.....	Holtom & Fox, Architects, Corporation-street, Dewsbury	do.
Cart Shed, Harris-street, Staith	Bradford Corporation	City Architect, Whitaker-buildings, Brewery-street, Bradford	do.
Emergency Staircases at Workhouse	Lancaster Guardians	J. Parkinson, Architect, 67, Church-street, Lancaster	do.
Four Cottages, Golgotha-road	Mr. R. Ward	do.	do.
*Execution of Works and Supply of Materials	Holborn Borough Council	Town Clerk, 197, High Holborn, W.C.	do.
Broken Granite (1,275 tons)	Thame (Oxon) U.D.C.	H. Howland, Surveyor, 17, Chinnor-road, Thame	do.
Works at Schools, Brownhill, near Dewsbury	.....	Holtom & Fox, Architects, Dewsbury	do.
Covering in the Market House, Warminster	.....	The Surveyor, Longleat Estate Office, Warminster	do.
Bacteria Filters at Sewage Works	Milnrow U.D.C.	J. Diggle, Civil Engineer, Hind Hill-street, Heywood	do.
Three Cottages, Houghton, near Winchester	Trustees of St. John's Hospital	T. Stopher, Surveyor, 57, High-street, Winchester	do.
House, Bell Croft, Southowram, near Halifax	.....	E. Taylor, Architect, 15, Church-street, Halifax	Mar. 26
Six Houses, &c., Honley, near Huddersfield	.....	J. Kirk & Sons, Architects, Honley	do.
Post Office, Clones, Co. Monaghan	Board of Works, Ireland	Office of Public Works, Dublin	do.
Pumping Station at Sewage Works	Leicester Corporation	E. G. Mawbey, Civil Engineer, Town Hall, Leicester	do.
Kerbing, &c.	Cheshunt U.D.C.	R. H. Jeffes, Engineer, Manor House, Cheshunt	do.
Additions to St. Martin's Church, Brighouse	.....	C. H. Fowler, Architect, The College, Durham	do.
Sewerage Works, &c.	Camelford R.D.C.	S. W. Jenkin & Son, Architects, Liskeard	do.
Lavatories in Public Market	Chester Corporation	City Surveyor, Town Hall, Chester	do.
*Alterations to Kitchen, New Service Room, &c., Asylum	Down District Lunatic Asylum	Graeme-Watt & Tulloch, 77A, Victoria-street, Belfast	do.
*Sewage Pumping Station, &c.	Cpn. Leicester Sewage Wks., &c., Com	Borough Engineer, Town Hall, Leicester	do.
House and Stabling, Shelf, Yorks	.....	Walsh & Nicholas, Architects, Museum Chambers, Halifax	Mar. 27
Cables and Stoneware Castings	Sunderland Corporation	J. F. C. Snell, Civil Engineers, Town Hall, Sunderland	do.
Rebuilding Part of Tower, Town Hall	Birkenhead Corporation	H. Hartley, Architect, 8, Harrington-street, Liverpool	Mar. 28
House and Stabling, Buckfold, Petworth, Sussex	.....	W. Buck, Architect, Horsham	do.
Additions to Shrogg's Wire Works, Halifax	.....	L. Coates, Architect, Waterhouse-street, Halifax	do.
Surveyor's Materials (One Year)	Gateshead Corporation	J. Bower, Civil Engineer, Town Hall, Gateshead	do.
Villa, Victoria-road, Elland, Yorks.	.....	C. F. L. Horsfall & Sons, Architects, Halifax	do.
Screens, &c., at Municipal Offices, Guildhall	Canterbury Town Council	A. C. Turley, City Surveyor, Canterbury	Mar. 30
School Enlargements, Fishponds, Bristol	.....	W. V. Gough, Architect, 24, Bridge-street, Bristol	do.
School Works, Windmill Hill, Bedminster	Bristol School Board	H. J. Jones & Son, Architects, Bridge-street, Bristol	do.
Rebuilding 51, High-street, Merthyr	Mr. B. H. Morris	C. M. Davies, Architect, 112, High-street, Merthyr	do.
Additions to Schools, Parkinson-lane	Halifax School Board	W. C. Williams, Architect, 29, Southgate, Halifax	do.
*Making-up and Paving New Street	Camberwell Borough Council	Council's Engineer, Town Hall, Camberwell, S.E.	do.
*Heating and Ventilating Apparatus, Harvey Institute	Barnsley Town Council	Borough Accountant, Barnsley	do.
*Well-sinking Works	East Cowes U.D.C.	W. Brown, Engineer, 706, High-road, Tottenham, N.	do.
Main Laying (10,000 yards)	Steyning West R.D.C.	F. Slaughter, Engineer, West-street, New Shoreham	do.
Cast Iron Pipes	do.	do.	do.
Two Steel Bridges, &c.	Cardiff Railway Co.	G. N. Abernethy, Architect, 4, Delahay-street, S.W.	do.
Sewers, &c.	Sevenoaks U.D.C.	S. Towlson, Civil Engineer, Sevenoaks	do.
Street Works, Lime-street	Smethwick Corporation	C. J. Fox Allen, Borough Surveyor, Town Hall, Smethwick	Mar. 31
Electrical Apparatus	Bridgend U.D.C.	T. J. Hughes, Council Offices, Bridgend	do.
Kerbing, &c., Fulwich-street, &c.	Dartford U.D.C.	W. Harston, Civil Engineer, 8, Hythe-street, Dartford	do.
Malthouse, Alnwick, Northumberland	Messrs. J. P. Simpson & Co.	Brewill & Baily, Architects, 44, Parliament-street, Nottingham	do.
*Main Sewerage Works, Wyke Regis	Weymouth R.D.C.	Lemon & Blizzard, Castle-lane, Southampton	do.
*Boundary Wall and Governor House, &c.	Sheffield United Gas Light Co.	Company's Engineer, Commercial-street, Sheffield	do.
*Erection of Postal Stores Building, Islington	Commissioners of H.M. Works, &c	H.M. Office of Works, Storey's Gate, S.W.	April 1
*Constructing Area to Infirmary, Hoxton-street, N.	Shoreditch Guardians	F. J. Smith, Architect, Parliament Mansions, Victoria-street, S.W.	do.
*Wood Paving Works	Hampstead Borough Council	O. E. Winter, Town Hall, Haverstock Hill, N.W.	April 2
*Making-up Roads	Ealing Borough Council	Council's Engineer, Town Hall, Ealing, W.	do.
*Erection of Boundary Wall at Cemetery	Hampstead Borough Council	Council's Engineer, Town Hall, Haverstock Hill	do.
*Making and Completing Roads at Infirmary, Highgate	Islington Guardians	W. Smith, 65, Chancery-lane, W.C.	do.
*Overground Convenience, Vauxhall Park	Lambeth Borough Council	Council's Engineer, Lambeth Town Hall, Kennington Green S.E.	do.
*Ilford Bridge Reconstruction	Essex County Council	Chief Surveyor, County Offices, Chelmsford	April 3
*Barking Bridge Reconstuction	do.	do.	do.
Road Works, Buxton-road, &c.	Chingford (Essex)	W. Stair, 14, The Parade, Chingford	April 4
*Sewerage and Drainage Works, &c.	Paddington Borough Council	Council's Surveyor, Town Hall, Paddington, W.	do.
*Supply and Delivery of Filtering Material	Tynemouth Corporation	J. Mansergh & Sons, 5, Victoria-street, S.W.	April 6
*Road Making and Paving Works	Hornsey U.D.C.	Council's Engineer, 99, Southwood-lane, Highgate, N.	April 7
*Isolation Hospital	Hampton U.D.C.	Council's Surveyor, Council Offices, Hampton, Middlesex	do.
*Two Blocks of Workmen's Dwellings	Stepney Borough Council	Council's Engineer, 15, Great Alie-street, Whitechapel, E.	do.
*Excavation, Making Roads, &c., Brentwood	Metropolitan Asylums Board	H. E. Milner & Son, 7, Victoria-street, S.W.	April 8
*Temporary Shed for Motor Ambulance Wagon	do.	Office of Board, Embankment, E.C.	do.
*Home for Female Attendants, Leavesden	do.	Newman & Newman, 31, Tooley-street, S.E.	do.
Foreshore Improvements	Colwyn Bay U.D.C.	W. Jones, Civil Engineer, Colwyn Bay, North Wales	April 9
*Public Offices and Fire Station	Aldershot U.D.C.	C. E. Hutchinson, Architect, 11, John-street, Bedford-row	April 14
*Excavating and Levelling Site, &c., Netherne Asylum	Surrey County Council	G. T. Hine & Co., 35, Parliament-street, S.W.	do.
*Superstructure of New Infirmary Annexe, Macclesfield	Chester County Asylum	H. Beswick, County Architect, Newgate-street, Chester	April 18
*Cemetery Chapel	Stanwell Parish Council	W. Ralph Low, Clarence-street, Staines	No date.
*School Furniture, &c.	London School Room	Works Dept., School Board Offices, Victoria Embankment, W.C.	do.
Sewerage Works, &c.	Dumfries Town Council	W. A. Carter, Civil Engineer, 5, St. Andrew-square, Edinburgh	do.
Surveyor's Materials, &c.	Bacup (Lancs) Corporation	A. B. Clarke, Town Hall, Bacup	do.
Cottage, Bothwell Park, Bellshill, N.B.	.....	J. Davidson, Architect, Academy-street, Goatbridge	do.
Stabling at Hotel, Threshfield, near Skipton	.....	J. W. Broughton, Architect, 19, High-street, Skipton	do.
Hospital, Manchester	.....	W. C. Hardisty, Architect, 5, John-street, Manchester	do.
Four-story Building, Glossop	.....	Messrs Olive-Partington, Ltd., Turn Lee Mills, Glossop	do.
Offices, Parliament-street, Hull	.....	Brodrick & Co., Architects, Hull	do.
Five Houses, Anlaby-road, Hull	.....	J. M. Dossor, Architect, Manor-street, Hull	do.
Business Premises, Alfred Gelder-street, Hull	.....	do	do.
Business Premises, Brook-street, Hull	.....	do.	do.
Three Shops, Kegworth, Leicester	Mr. W. M. Hopper	E. R. Ridgway, Architect, Long Eaton, Nottingham	do.
	do.		
	Turner & Drinkwater		
	Long Eaton Wkg. Men's Co-op. Soc.		

[See also next page.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Temporary Assistant in Engineers' Office (Water Dept.)	Tottenham U.D.C.	3*l.* 3s. per week	Mar. 27
*President Engineer	Essex County Council	3*l.* 10s. per week	Mar. 30
*Clerk of Works (2)	do.	4*l.* per week	do.
*Building Inspector and Clerk of Works	Acton District Council	150*l.*	Mar. 31

Those marked with an asterisk (*) are advertised in this Number. *Contracts*, iv. vi. viii. & x. *Public Appointments*, xvi.

PRICES CURRENT (*Continued*).

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 6
Superfine Hard-drying Oak, for Seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

S. & C.—M. & C.—R. & S. (Amounts should have been stated.) A. G. D. (Below our limit).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ALRESFORD (Hants).—For the erection of a house, Town House Estate. Mr. H. Yolland Boreham, architect, 75, Finsbury-pavement, E.C. :—

Jenkins & Sons, Ltd.	£980 0	McWilliam & Son	£832 0
F. W. Harris	970 0	Eddolls	832 0
J. Harris	855 0	Golding & Ansell	800 0
A. A. Gale	850 0	H. Avery, Winchester*	709 15

BARNARD CASTLE.—For the erection of a warehouse for the Barnard Castle Co-operative Society, Ltd. Messrs. Pegg & Farrow, architects, 7, Market-place, Barnard Castle. Quantities by architects :—

D. D. Hall	£543 14 3	R. Wilson	£359 8 0
C. Martin	518 3 6	G. Scott, Barnard Castle*	304 7 9
G. Robinson	360 1 0		

BRENTWOOD.—For the erection of a country house, Warrin-road, Shenfield. Mr. Hugo R. Bird, architect, High-street, Brentwood :—

Dix & Rogers	£735
Burtwell & Jarvis*	715

BRISTOL.—For the erection of a new shop and premises on the new Clifton Estate, Redland, for the Grocers' Alliance. Mr. Thomas Scammel, architect, 1, St. Stephen-street, Bristol :—

W. Church	£3,076	Perkins & Son	£2,820
Denby & Co.	3,038	A. J. Beavan	2,743
G. Humphries	2,930	E. Love	2,724
A. Dowling	2,898	Wilkins & Gosling	2,653
Jones & Hill	2,839	T. R. Lewis*	2,606

[All of Bristol.]

CROYDON.—For rebuilding shop premises, No. 11, 11A, 11B, and 13, George-street. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect :—

W. Potter	£5,310	Smith & Sons	£4,853
D. W. Barker	5,239	Lascelles & Co.	4,796
Dawson & Son	4,987	B. E. Nightingale	4,790
Hanscomb & Smith	4,925	E. J. Saunders	4,694
Bulled & Co.	4,915	Akers & Co.	4,655
Battley, Sons, & Holness	4,879	Smith & Sons, Ltd	4,625
		Lorden & Son*	4,388

HANDSWORTH (Staffs).—For sinking a well, &c., Hinstock-road, and Grove-lane, for the Urban District Council :—

W. Barrick	£2,014 10 0	J. North	£763 10 0
Isler & Co.	970 0 0	Timmins & Sons, Ltd., Runcorn*	739 12 6
Matthews & Co.	878 3 6		
J. Thom	845 10 0		

HIGHAM FERRERS (Northants).—For the erection of a villa residence, Kimbolton-road, Higham Ferrers, for Mr. Frank Walker. Mr. Geo. Hall, architect, Higham Ferrers :—

Machine Joinery Wks., Rushden	£455	Peter Ireson	£399
Josiah Ireson	435	John Titmus, Finedon*	335

HOVE (Sussex).—For the erection of boundary walls, &c., Sackville-road, for the Corporation. Mr. H. H. Scott, Borough Surveyor, Town Hall, Hove :—

Brown & Son, Brighton*	£3,797

LEICESTER.—For Coalville Waterworks (Contract No. 7). Mr. J. B. Everard, M.Inst.C.E., Leicester :—

T. Herbert	£3,220 0 0	W. Moss	£2,986 0 0
Herbert & Sons	3,217 8 0	E. Orton, Coalville*	2,938 0 0
F. Elliott	3,185 0 0		
Griffin Bros.	3,075 14 4		

LONDON.—For works to the Union Brewery, Wandsworth, S.W., for the Holsten Brewery Co., Ltd. Mr. C. Botterill, architect and surveyor, 583, Fulham-road, Walham Green, S.W. :—

Cleansing, Repairs, and Decorations to Offices.

Wood & Son	£98 8 6	McArthur & Co*	£79 10 0
W. T. Humphrey	98 0 0		

Painting and Repairs to Residences and Premises.

S. S. Witton	£397 14	W. J. Grant	£255 0
J. Knight	360 0	McArthur & Co.*	253 10
W. T. Humphrey	335 0		

Paving and Drainage.

Neave & Son	£683	Mowlem & Co.	£665
Wimpey & Co.	675	Nowell & Co.*	631

LONDON.—For the erection of new chimney-shaft and engine-house, and alteration to boiler-house, &c., at Kensington Workhouse, Marloes-road, Kensington, for the Guardians of the Poor of the Parish of St. Mary Abbots. Mr. Ernest Flint, architect, 80, Coleman-street, E.C. Quantities by Mr. V. A. Edlin, 80, Coleman-street, E.C. :—

Neil & Co.	£2,300 0	Chambers Bros.	£2,052 0
Fraser & Sons	2,283 0	Thos. Robinson	2,025 0
Windsor & Co.	2,236 0	Gray & Co.	1,989 0
Chas. Ansell	2,167 0	J. O. Richardson	1,969 0
Dearing & Son	2,155 0	T. Pearse	1,966 0
Jarvis & Sons	2,150 0	Wallis & Co.	1,899 0
Wm. Webber	2,130 0	Foster Bros.	1,875 0
W. J. Renshaw	2,065 0	Chas. R. Price	1,857 0

LONDON.—For erection of factory premises at 57, Glengall-road, Peckham, S.E. Mr. C. Collas Robin, architect, 203, Strand. W.C. :—

Josolyne & Young	£2,697	J. Anley	£2,440
Carmichael	2,685	Lascelles & Co.	2,410
Shurmur & Sons	2,619	G. Packer	2,334
H. L. Holloway	2,515	W. Nash, New Cross*	2,278
Sheffield Bros.	2,497		

LONDON.—For constructing an underground convenience in Blomfield-street at the Junction with Liverpool-street, for the Corporation :—

Finch & Co.*	£1,618

LONDON.—For the supply and fixing of gas-holders and other fittings, and for repairs at the Westminster gas-meter testing office, for the London County Council :—

Glover & Co., Ltd.	£2,451	Parkinson and W. & B. Cowan, Ltd.*	£1,675
Sugg & Co., Ltd.	1,895		

LONDON.—For electric battery at the electricity-meter testing station, 42, Cranbourne-street, for the London County Council :—

Chloride Electrical Storage Co., Ltd.	£513 0
D. P. Battery Co., Ltd.	439 0
Tudor Accumulator Co., Ltd.	372 0
Electrical Power Storage Co., Ltd.*	307 14
Hart Accumulator Co., Ltd.	307 9
Pritchetts & Gold, Ltd.	242 0

SWANSEA.—New police and fire-brigade station, for the Corporation. Mr. George Bell, Borough Surveyor. Quantities by Mr. C. H. Rogers, 33, Glanmor-crescent, Swansea :—

John Williams*	£7,765

TROWBRIDGE (Wilts.).—For the erection of Trowbridge and District Joint Isolation Hospital (for thirty patients), for the Hospital Committee. Mr. J. Hugh Goodman, architect, Town Hall Chambers, Reading. Quantities by Messrs. Henry Cooper & Sons, Surveyors, Reading :—

	£ s. d.	Extra for plastering walls of pavilions, &c. £ s. d.
Wilkins & Sons	10,483 4 6	40 0 0
Wort & Way	9,910 14 1	31 17 3
Chancellor & Sons	9,464 0 0	58 0 0
Henry Ash	9,426 0 0	146 0 0
W. J. Bloxham	9,342 6 11	115 7 0
Wills & Sons	9,134 0 0	35 0 0
Pittard & Son	9,115 10 0	35 0 0
J. & M. Patrick	9,050 0 0	57 0 0
Jenkins & Sons, Ltd.	8,977 0 0	49 0 0
Wakeham Bros.	8,967 0 0	51 0 0
Fincher & Co.	8,957 14 7	62 1 6
Butcher & Son	8,878 17 0	21 0 0
E. C. Hughes	8,779 6 8	43 13 0
H. Hoskings	8,376 0 0	44 0 0
Hayward & Wooster	7,997 0 0	33 0 0
McCarthy E. Fitt	7,905 0 0	73 0 0
Jacob Long & Sons	7,848 0 0	41 0 0
A. J. Colborn	7,823 17 11	63 3 4
E. Linzey	7,772 1 9	75 2 5
Stephens, Bastow, & Co., Ltd.	7,574 0 0	54 0 0
G. Moore, Trowbridge*	6,934 3 0	49 11 0

TWICKENHAM.—For laying out Marble Hill, for the London County Council :—

J. East	£615 0 0	J. & S. Agate	£473 17 6
Horton & Son	548 0 0	Turner & Son	470 0 0
C. Light	544 0 0	Murray Marshall*	450 0 0
E. C. White	540 0 0		

WALTHAMSTOW.—For additions and alterations to the Castle public-house, Eden-road, Walthamstow. Mr. Geo. B. Jerram, architect, Hoe-street, Walthamstow :—

Amey	£689 0	J. A. Read	£536 0
Fuller & Son	670 0	Castle & Son	530 0
Stewart	640 0	Crisp	494 0
Bruce	604 0	Fairhead*	411 5
Slatter	596 10		

WILLESDEN—For the erection of dyeing and cleaning works, for Mr. J. Todd, of Westbourne Park. Mr. T. F. Shaw, architect and surveyor, Harlesden :—

Goodman & Sons	£2,458	G. Robinson, Holloway*	£2,185
Parfitt & Co.	2,269	J. Sharp (withdrawn)	1,870
C. Simmons	2,203		

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's Architect :—

* *Recommended for acceptance.*

BROADWATER-ROAD. — Accommodation : Boys, 306; girls, 306; infants, 308; total, 920. Graded school on three stories. Halls: Boys', 50 ft. by 26 ft.; girls', 50 ft. by 26 ft.; infants', 50 ft. by 26 ft. Classrooms: Boys', 56, 56, 50, 48, 48, 48; girls', 56, 56, 50, 48, 48, 48; infants', 56, 56, 50, 50, 48, 48. Drawing classroom and science room, about 1,000 sq. ft. area. Special school—three classrooms of 20 each; total, 60. Heating by low-pressure hot-water apparatus in main school, and open fires in special school. Schoolkeeper's house :—

Leslie & Co., Ltd.	£25,176	Stimpson & Co.	£22,390
Holloway Brothers, Ltd., London	24,068	J. & M. Patrick	22,276
Smith & Son	23,684	W. Downs	21,897
Lawrance & Sons	23,198	Garrett & Son	21,705
Wallis & Sons	22,884	F. & H. F. Higgs	21,427
King & Son	22,870	Lathey Bros.	21,404
Marsland & Sons	22,861	Johnson & Co., Ltd.*	20,948

[*See also next page.*]

BROWNHILL-ROAD SCHOOL.—Accommodation: Boys, 432; girls, 432; total, 864. Higher Grade School on three stories. Halls: Boys', 58 ft. by 30 ft.; girls', 58 ft. by 30 ft. Classrooms: Boys', 50, 50, 50, 40, 40, 40, 36, 32, 32, 32, 30; girls', 50, 50, 50, 40, 40, 40, 36, 32, 32, 32, 30. Drawing classroom, 1,150 ft. area; science rooms, 1,700 ft. area. Heating by low-pressure hot-water apparatus. Junior mixed and infants' school on two stories. Junior mixed, 254; infants, 254; total, 508. Halls: Junior mixed school, 50 ft. by 24 ft.; infants' school, 52 ft. by 24 ft. Classrooms: Junior mixed school, 60, 50, 48, 48, 48; infants' school, 60, 50, 48, 48, 48. Heating by low-pressure hot-water apparatus and open fires. Schoolkeeper's house:—

Martin, Wells, & Co., Ltd.	£35,702	Treasure & Son	£32,245
Thomas & Edge	31,989	Lawrance & Sons	32,236
T. L. Green	33,961	Stimpson & Co.	31,990
W. Downs	33,464	F. & H. F. Higgs	31,906
Marsland & Sons	33,356	Garrett & Son	31,746
Gregar & Son	33,196	Mitchell & Son	31,671
John Greenwood, Ltd.	33,097	Wallis & Sons	31,466
Longley & Co.	32,894	J. & M. Patrick	31,294
Munday & Sons	32,847	Spencer, Santo, & Co., Ltd.	31,127
Smith & Sons, Ltd.	32,491	J. & C. Bowyer	30,887
		Johnson & Co., Ltd.*	30,584

BYRON and BRIGHT-STREET.—Taking down boys' offices and rebuilding them further away from school buildings, &c.:—

Ashby & Horner	£746 0 0	J. T. Robey	£550 0 0
Munday & Sons	653 0 0	Gibb & Co.	488 0 0
Johnson & Co.	593 0 0	F. & F. J. Wood	478 0 0
Barrett & Power	582 0 0	F. Bull	461 0 0
R. P. Beattie	579 9 4	Stevens Bros.*	448 0 0
Vigor & Co.	567 10 0		

COMPTON-STREET.—Pulling down houses, and enclosing, draining, and paving additional land to enlarge boys' playground:—

Johnson & Co.	£699	T. L. Green	£493
Marchant & Hirst	574	Willmott & Sons	486
Williams & Son	539	F. & F. J. Wood	438
Staines & Son	495	Stevens Bros.*	428

FORTESS-ROAD SCHOOL.—Junior mixed, 178; senior mixed, 178; infants, 180—total, 536. Senior, junior mixed, and infants on three stories. Hall, senior mixed, 50 ft. by 26 ft.; hall, junior mixed, 50 ft. by 26 ft.; hall, infants, 50 ft. by 26 ft. Classrooms: Senior mixed, 50, 48, 40, 40; junior mixed, 50, 48, 40, 40; infants, 50, 50, 40, 40. Drawing class and science rooms, 1,100 ft. area. Heating by low-pressure hot-water apparatus and open fires:—

King & Son	£18,850	Appleby & Sons	£17,048
Dearing & Son	18,748	L. H. & R. Roberts	16,949
Grover & Son	18,580	W. M. Dabbs	16,905
Clarke & Bracey	17,827	Lathey Bros.	16,795
W. Smith & Son	17,785	Williams & Son	16,684
Leslie & Co., Ltd.	17,517	Willmott & Sons	16,675
Miskin & Sons	17,360	C. Cox	16,642
McCormick & Sons	17,298	Lawrance & Sons	16,493
Simpson & Son	17,197	Treasure & Son,* London and Shrewsbury	16,152
Patman & Fotheringham, Ltd.	17,168		
Allen & Sons, Ltd.	17,091		

MARLBOROUGH-ROAD SCHOOL.—Adapting a house for use of school-keeper, &c.:—

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W. R. & A. Hide	295		

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Martin, Wells, & Co., Ltd.	9,725	Rice & Son	8,696
C. F. Kearley	9,545	Holloway Bros (London), Ltd.	8,669
General Builders, Ltd.	9,511	King & Son	8,656
Leslie & Co., Ltd.	9,161	Treasure & Son	8,545
McCormick & Sons	8,961	Lathey Bros.	8,495
Appleby & Sons	8,852	Stimpson & Co.	8,350
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Marchant & Hirst	4,590 0	C. Cox	4,305 0
Willmott & Sons	4,467 0	Lawrance & Sons	4,172 0
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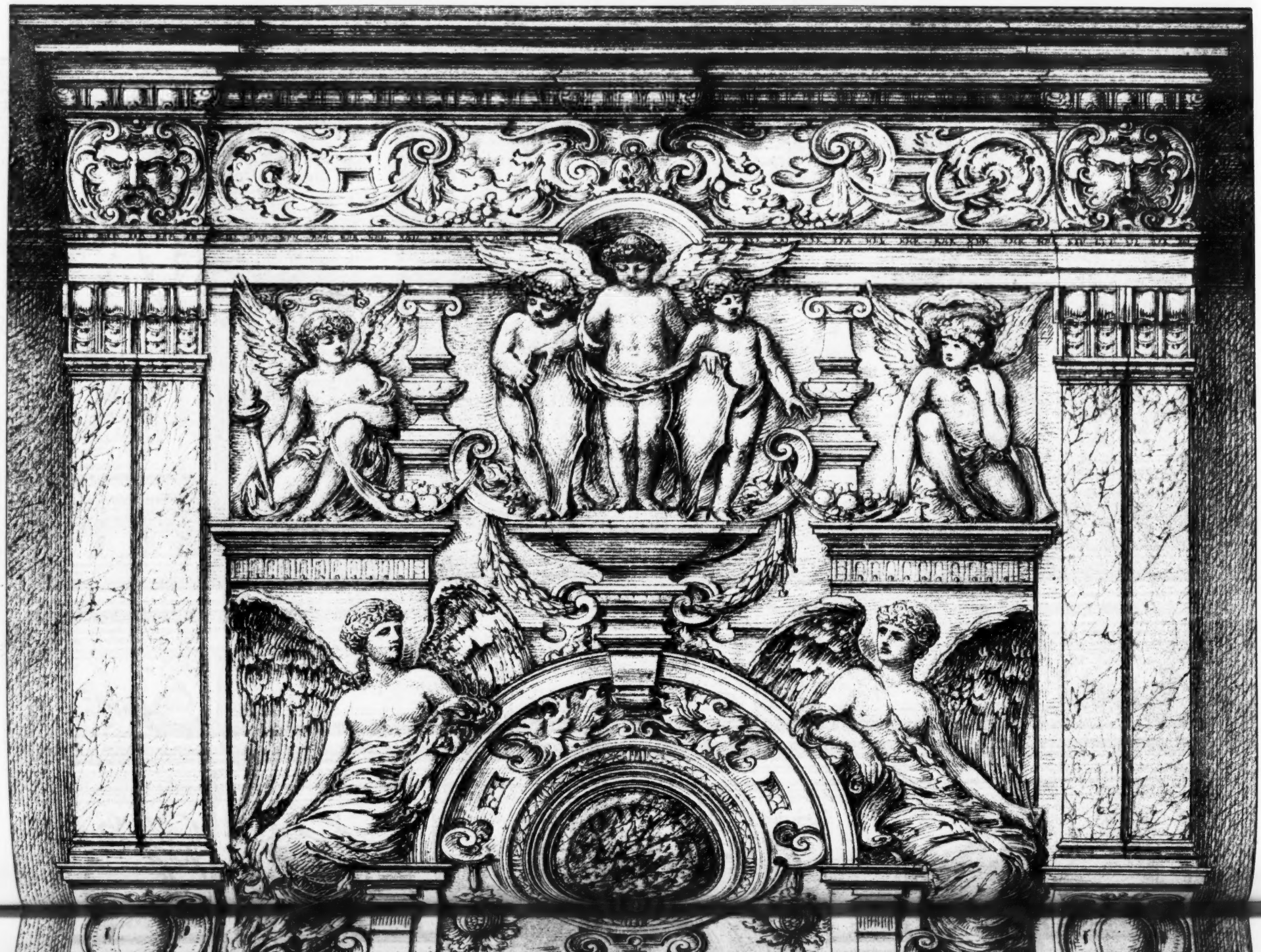

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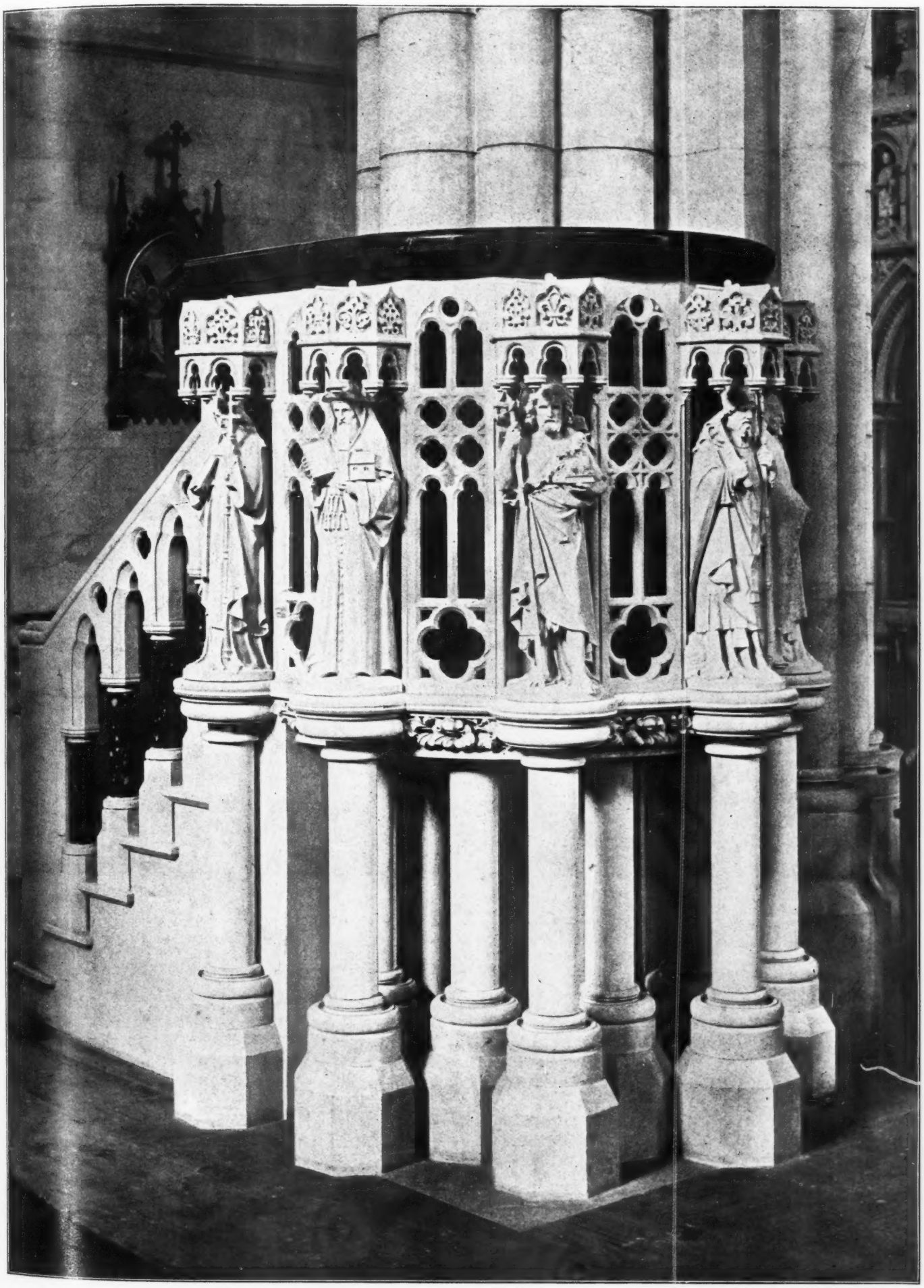

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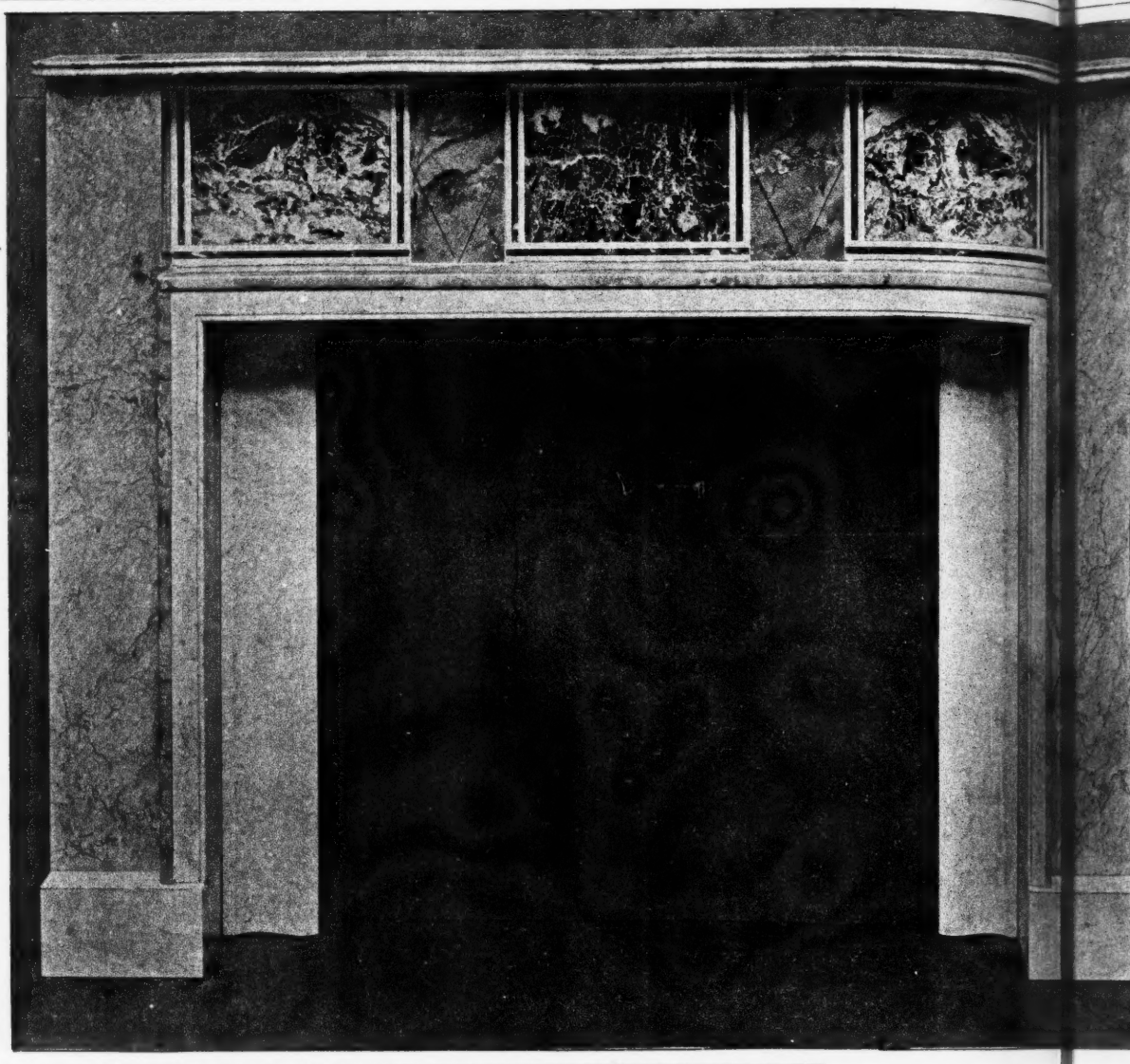

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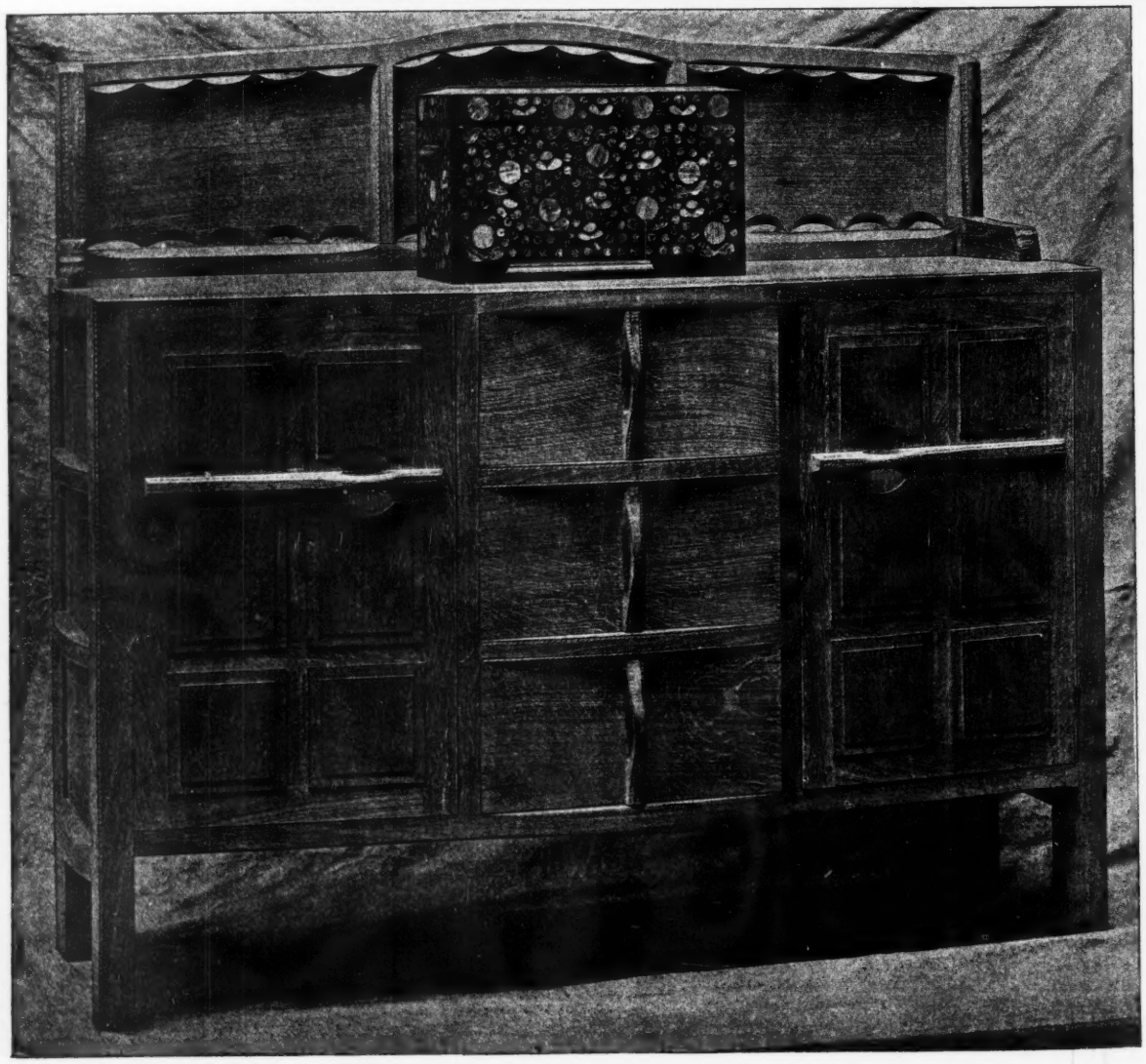

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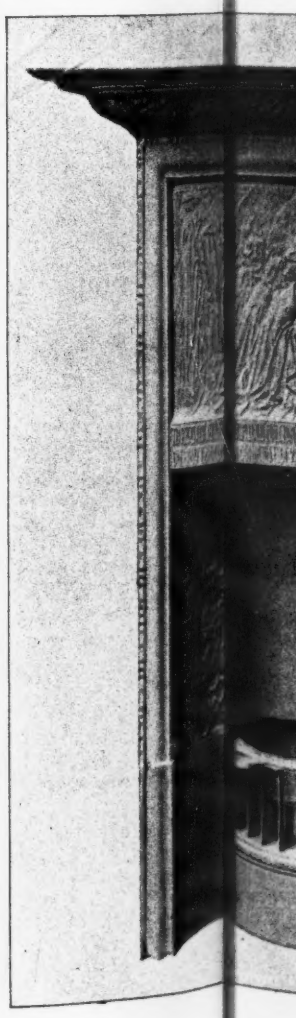

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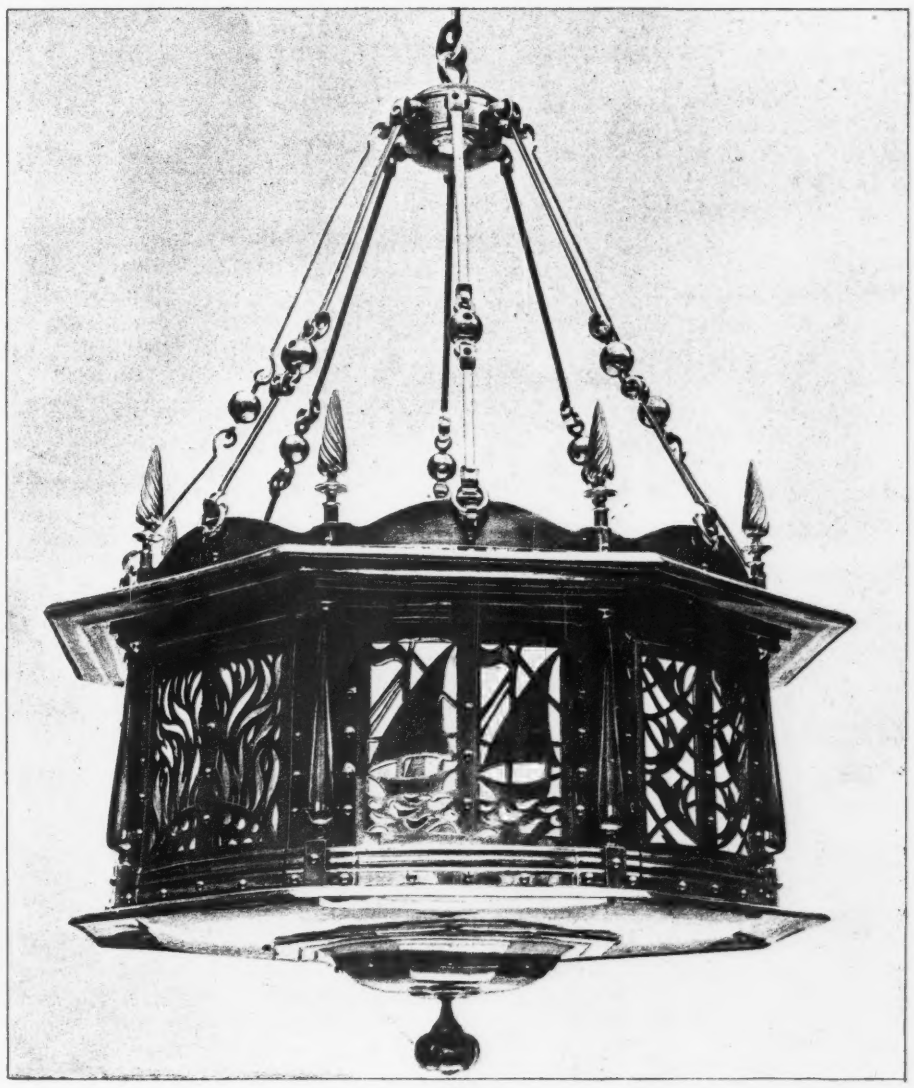

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